KEX-20E KEX-23E

ARC TUNER COMPONENT CAR STEREO CASSETTE DECK WITH AM/FM ELECTRONIC TUNER

ARC TUNER COMPONENT CAR STEREO CASSETTE DECK WITH LW/MW/FM ELECTRONIC TUNER

SERVICE MANUAL

Subject:
For Cassette Mechanism, refer to the Service Manual of unit number CX-100A/H

SPECIFICATIONS

General

Power source	DC 13.8V (11 ~ 16V allowable)
Grounding system	Negative type
Tone controls	Bass: ±10 dB (100 Hz)
	Treble: ±10 dB (10 kHz)
Maximum output level	More than 200mV
Output impedance	100Ω
Dimensions (W×H×D)	180×50×150 mm
Nose size (W×H×D)	105×42×16 mm
Shaft interval	130 mm
Weight	1.7 kg

Tape player

Tape	Compact cassette tape (C-30 ~ C-90)
Tape speed	4.76 cm/sec. (+0.19 cm/sec. −0.05 cm/sec.)
Fast forward time	Within 120 sec. for C-60
Rewind time	Within 120 sec. for C-60
Wow & flutter	No more than 0.13% (WRMS)
Frequency response	30 ~ 15,000 Hz (±3 dB)
Cross talk	More than 46 dB
Signal-to-noise ratio	Dolby NR IN: more than 60 dB
	Dolby NR OUT: more than 52 dB

FM tuner

Frequency range	88 ~ 108 MHz (KEX-20)
	88 ~ 104 MHz (KEX-23)
Usable sensitivity	13.8 dBf (1.9 μV/150Ω)
50 dB quieting sensitivity	17.5 dBf (2.9 μV/150Ω, mono)
	39.8 dBf (38μV/150Ω, stereo)
Signal-to-noise ratio	60 dB
Capture ratio	1.5 dB
Selectivity	70 dB (±400 kHz)
Image rejection	45 dB
IF rejection	80 dB
Distortion	0.5% (at 60 dB, 400 Hz, mono)
	0.5% (at 60 dB, 1 kHz, stereo)
Frequency response	30 ~ 15,000 Hz (±3 dB)
Muting level	17.5 dBf (2.9 μV/150Ω)
Stereo separation	32 dB (at 60 dB, 1 kHz)

MW (AM) tuner

Frequency range	525 ~ 1,605 kHz
Sensitivity	30μV
Selectivity	25 dB (±10 kHz)
Local/distant switch effect	14 dB attenuation
Max. input signal (distortion 5%)	125 dB

LW tuner (KEX-23 only)

Frequency range	150 ~ 280 kHz
Sensitivity	70μV
Selectivity	35 dB (±10 kHz)
Local/distant switch effect	14 dB attenuation
Max. input signal (distortion 5%)	125 dB

Note:
Specifications and the disign subject to possible modification without notice due to improvements.

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CONTENTS

1. PARTS LOCATION

- **The photo shows the model KEX-23.**

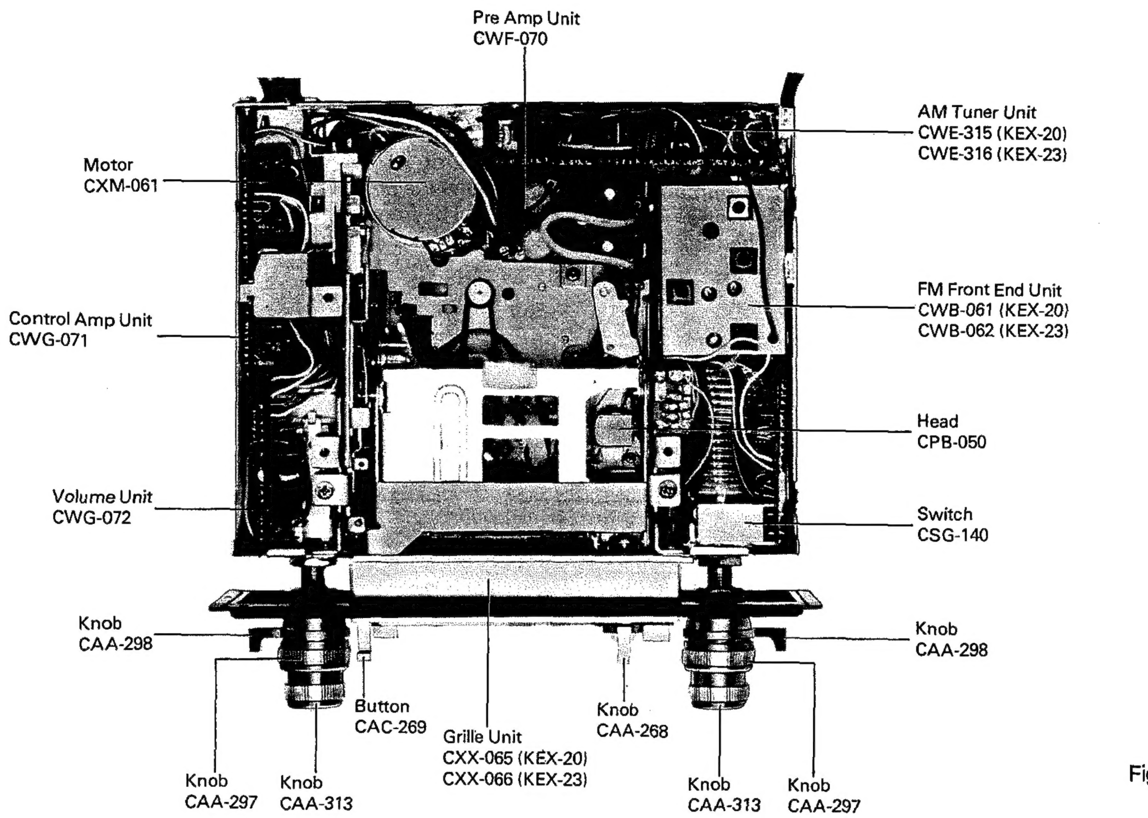


Fig. 1

2. CIRCUIT DESCRIPTION

- **Audio Level Diagram**

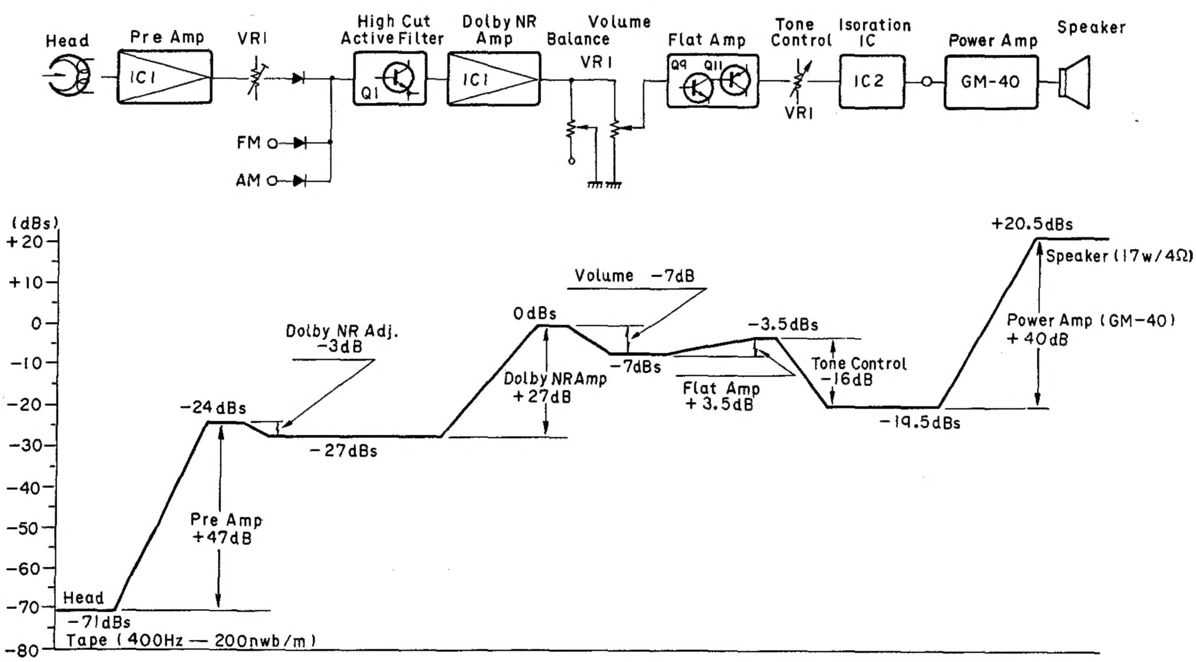


Fig. 2

• Digitally Controlled Preset Tuner

This digitally controlled circuit with frequency presetting systems consists of a voltage synthesizing circuit incorporating varactor diodes (varactors), and is designed to generate varactor control voltage, memorize tuning frequency, and digitally indicate the tuned frequency.

Turn the tuning knob left or right to feed tuning pulses to LSI (PD1002) so that the contents of the internal counter may be either reduced or increased. The output of the counter is converted through the D/A converter into DC voltage which is applied to the varactor. The tuning frequency rises or falls depending on the direction the tuning knob is turned, permitting selection of the desired stations.

To preset the tuned station, simultaneously push the station selector button and the memory button. The frequency of the selected station is thereby stored in the RAM (Random Access Memory), and pushing only the selector button will recall the frequency stored in memory to again tune the preset station.

The frequency tuned is displayed by an array of 32 LEDs. This readout is completely electronic.

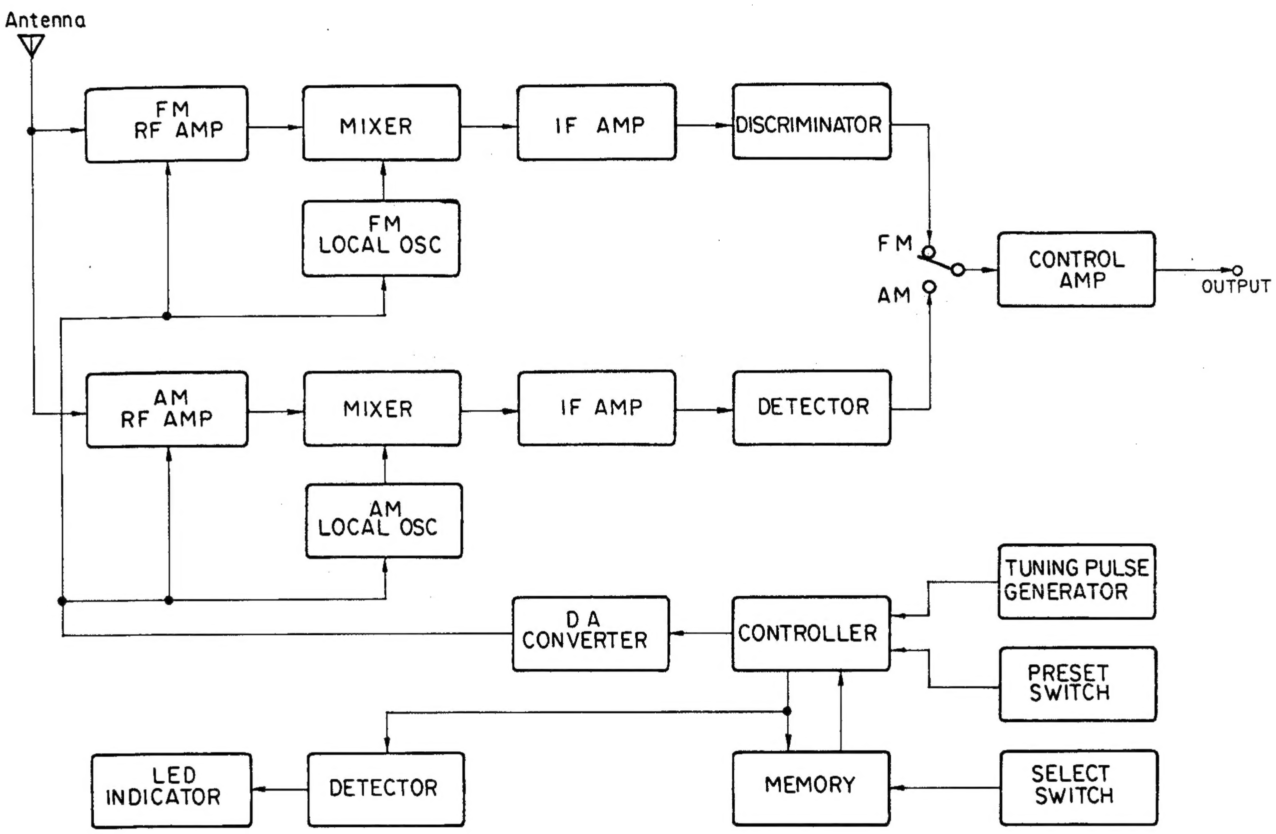


Fig. 3

• Control LSI (PD 1002)

The block diagram of LSI PD1002 is shown in Fig. 4 The essential function here is represented by the 11 bit up/down counter, the output of each bit being connected to a D/A converter in order to generate a DC voltage corresponding to the contents of the counter. The contents of this counter is variable by means of applying externally generated tuning pulses so that the desired voltage output level can be obtained. Each bit, moreover, is connected with the RAM (Random Access Memory) so that the output voltage of the tuned frequency can be stored in order that station presetting can be performed. This process is via digital signals. And, of course, this stored information can be recalled instantly to the counter to allow tuning of the memorized preset station frequency.

Because semiconductor memories are volatile—that is, memory disappears with removal of supply voltage—voltage must continue to the memory portions of the circuit even with power OFF. The CMOS PD1002, however, requires extremely low levels of power: with the oscillator not in operation power consumption is only several tens μW; with the oscillator in operation the power consumption is 20mW. Therefore, with the oscillator not in operation, connection of the PD1002 poses no problem to car batteries. In other words, with the enable terminal at low levels there is no oscillation, and the terminal is designed to be at low levels with the power supply switch set to OFF.

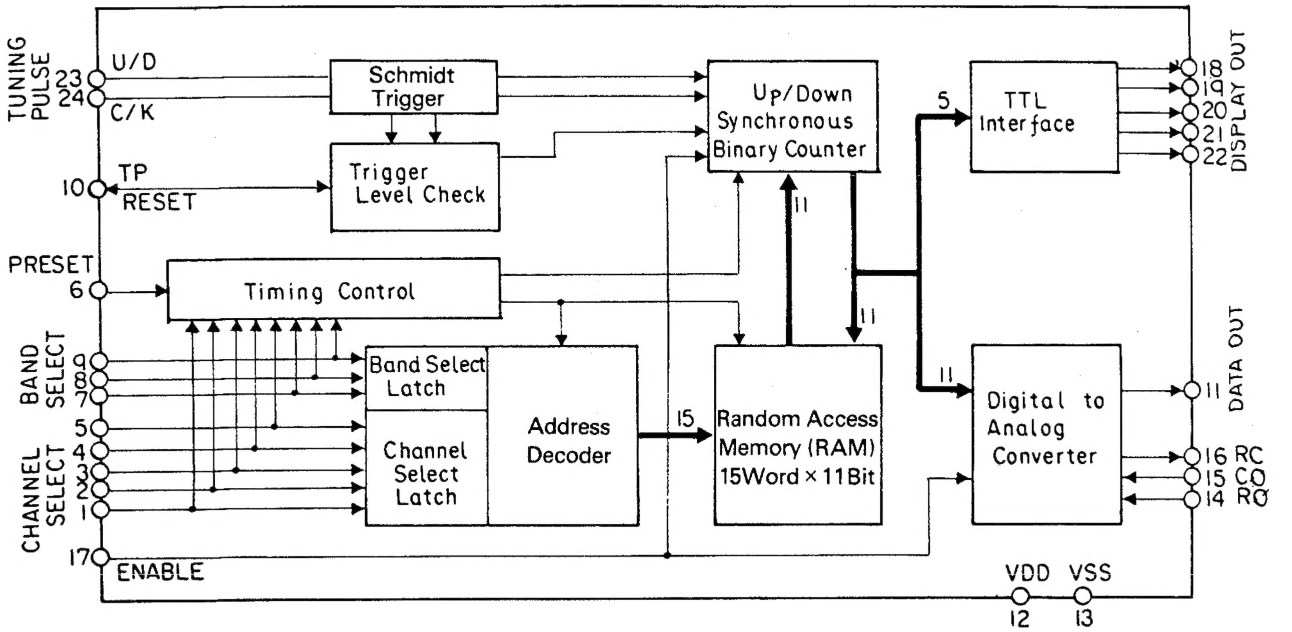


Fig. 4

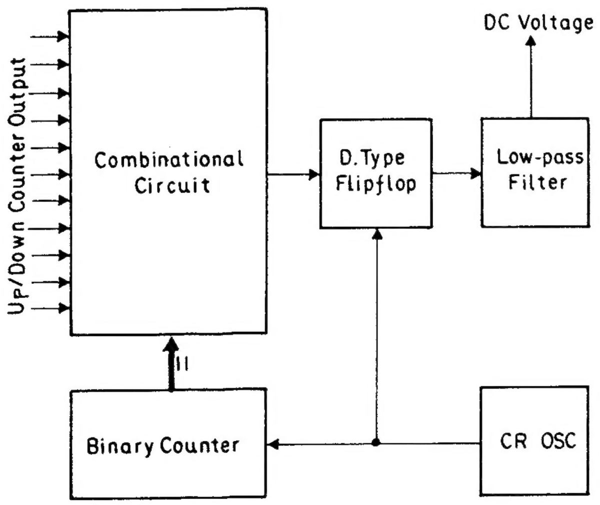


Fig. 5

• Tuning Pulse Generator

This device (basic operating principles are shown in Fig. 6) generates up/down pulses and clock pulse by turning the tuning knob. The direction the disc is turned determines whether up or down pulses are generated (see Fig. 7). These pulses determine the contents of the up/down counter.

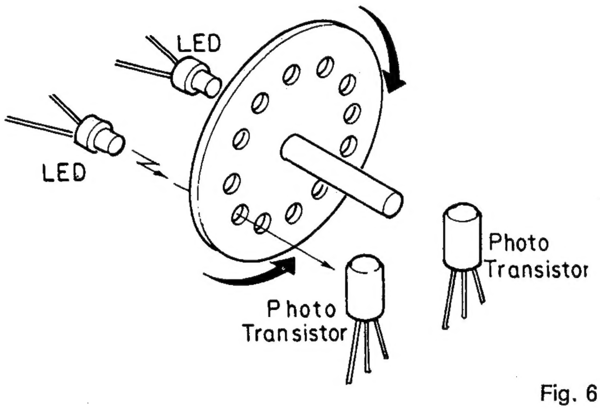


Fig. 6

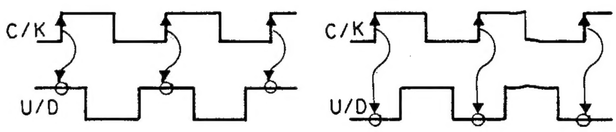


Fig. 7

• AM Tuner

The KEX-20 tuner is distinguished from the conven tional μ tuning type counterpart by the antenna input circuit. The varactor tuner of the KEX-20 is equipped with an RF Buffer in the first stage. The reason for this arrangement is the car antenna, the equivalent circuit as shown in Fig. 8. The 15 pF represents an equivalent capacitance of the antenna bar section, and the 65 pF equivalent capacitance of the cable connected to the antenna. The μ tuning type tuner is designed to make use of the combined capacitances of 15 pF and 65 pF, and 80 pF as part of the tuned circuit which requires an inductance that allows covering the entire AM band from 520 kHz to 1630 kHz with the total capacitance of 150 pF. Therefore, the capacitance variation ratio is $(1630 \div 520)^2 = 9.83$. The voltage to be applied to the varactor is in the range 1.4V to 8.4V. The standard SVC-303 provides a capacitance of 417 pF for 1.4 V and 24.48 pF for 8.4 V, and the variation ratio being 18.24. This means the band ranging from 520 kHz to 1630 kHz can be adequately covered.

The varactor, however, if used in the input circuit, will result in a capacitance variation ratio of $(417 + 80) \div (24.48 + 80) = 4.76$ with the addition of 80 pF making up the equivalent antenna circuit and allowing no more than half the required band to be covered. This is the reason an RF buffer amplifier is required to eliminate the 80 pF loading capacitance.

The varactor tuner has yet another advantage. The μ tuning type tuner requires adjustment of sensitivity when tuning in a weak signal around 1 MHz in order to prevent tracking error due to the difference in capacitance in the antenna cable. The varactor tuner eliminates this problem.

Q1 (2SK49) directly connected to the antenna is most vulnerable to surging, and D1 (ITT73N) is placed between the input terminal and ground to absorb it. ITT73N is rated at 1A per second. The input section of the FM tuner connected in parallel to the antenna input terminal incorporates a discharge element with a firing potential of less than 2 kV.

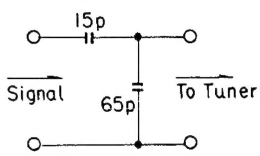


Fig. 8

• Oscillator Circuit

Fig. 9 shows the tuning voltage supply circuit and the varactor temperature compensating circuit. Adjusted for the dispersion properties of the varactor, the working voltage is made variable so as to permit adjustment of the band to be covered. E1 is a tuning variable power supply, E2 is a stabilized power supply of 8.8 V, and R1 is a resistor for the filter incorporated in the output section of the control IC (PD1002). The control IC is driven via the same voltage as E2 so that the maximum voltage of E1 is 8.8 V, and the maximum voltage to be applied to the varactor cathode, regardless of the volume position, is 8.8 V. The minimum voltage with E1 at 0 V is determined by the values of E2, R1 , R2 , and VR1; and the minimum voltage is designed to be 1.8 V with the standard varactor.

The anode side of the varactor is equipped with a temperature compensating circuit which is composed of varistors and resistors. The anode electric potential is 0.4 V, and the voltage to be applied to either end of the varactor is 1.4 V to 8.4 V. The capacitance compensating voltage to match the change in the temperature of the varactor varies with the working voltage from 1.1 mV/°C. The voltage variation of the varister MV-1 is −2mV/°C, and the anode side of the varister, will lead to overcompensation. Therefore, the variation in voltage of the varactor is divided through resistors R4 and R5 to provide a voltage change of some −1.3 mV/°C R3 , a biasing resistor for the varister, is designed to supply 3 mA.

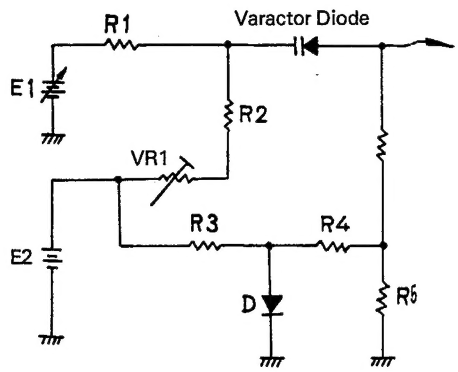


Fig. 9

• LW/MW Tuner

An LW/MW tuner should be able to tune the two bands (MW: 515 – 1,630kHz; LW: 145 – 295kHz). Therefore, the LW/MW tuner has two different types of applied voltages for the variable capacitor, high frequency circuits, and oscillator circuits which should be switched for MW and LW. For the applied voltages of the variable capacitor, the independent volumes for MW and LW are mounted on this tuner for adjusting the applied voltages, and the voltages to be applied are changed with a mechanical switch. For the high frequency circuits, the coil for MW is connected to that for LW in a series. While the MW is being tuned, the coil for LW is shortcircuited; while the LW is being tuned, the high frequency circuits are changed with a switch diode so that both the coils for MW and LW may be worked as the tuning coil for LW. For the oscillator circuits, independent oscillator circuits for MW and LW are incorporated in the tuner and are changed with a switch diode.

• Tape Selector Circuit

There are many types of cassette tapes: normal tapes, chrome tapes and the more recent metal tapes. Trends in tapes are toward an improved signal-to-noise ratio and an extended dynamic range, and even with car stereos, it has become necessary to cater to both chrome tapes and metal tapes.
When a metal or chrome tape is played back on a deck designed for normal tapes, the recording equalizer time constant is recorded not at 120μs but at 70μs, and so the sound appears higher than it actually is.
To compensate for this, a tape selector is provided to select between the normal tape position and the chrome tape position by switching the playback equalizer time constant between 120μs and 70μs.
When this switch is set to the normal tape position (tape selector is OFF), the output level falls as the frequency rises from about 50 Hz (3180μs) at −6 dB/oct, and when the frequency rises above the 1.3 kHz (120μs) level, the level becomes constant—this is the NAB curve (Fig. 10). Usually, when playing back a normal tape, the frequency response is flat. But when a chrome tape or a metal tape is played back with this switch at the normal position, the high frequency range response rises several dB.
When the switch is set to the chrome tape position (tape selector is ON), the low-frequency range response is the same as that for the normal position but the level drops around a frequency of about 2.3 kHz (70μs) at −6 dB/oct, and once the frequency exceeds this value, the level becomes constant. When a chrome tape or a metal tape is played back, the frequency response becomes flat. When playing back a normal tape in the chrome position, the high frequency range response falls several dB.

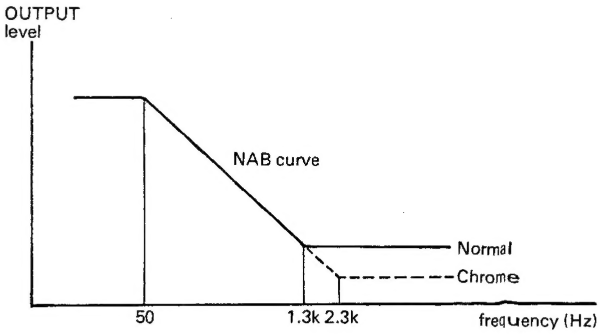


Fig. 10

• Dolby NR Circuit

Dolby NR is a method of reducing tape hiss, particularly the noise heard in the high-frequency region, and its circuit improves the signal-to-noise ratio by about 10dB. The Dolby NR circuit works as a flat amplifier during AM or FM reception and during ordinary tape playback, and it provides the Dolby NR effect when the Dolby NR switch is set to the IN position during the playback of a tape which has been recorded using the Dolby NR system.

In the case of the left channel, the signal which has passed through the D1, D3 or D5 signal selector diode passes through the 19kHz high cut filter and is amplified by Q3. The Dolby NR circuit employs IC1(HA11226) which is provided in both the left and the right channels.

When the Dolby NR switch is set to the OUT position, +B is applied as bias to the base of Q5 and Q5 goes to OFF. Since this prevents the signal from entering the high-pass filter of the Dolby NR circuit, this circuit functions as an ordinary flat amplifier.

When the Dolby NR switch is set to the IN position, +B is not supplied to Q5 and Q5 goes to ON. The high-pass filter of the Dolby NR circuit is therefore connected to the output terminals and the Dolby NR effect is provided.

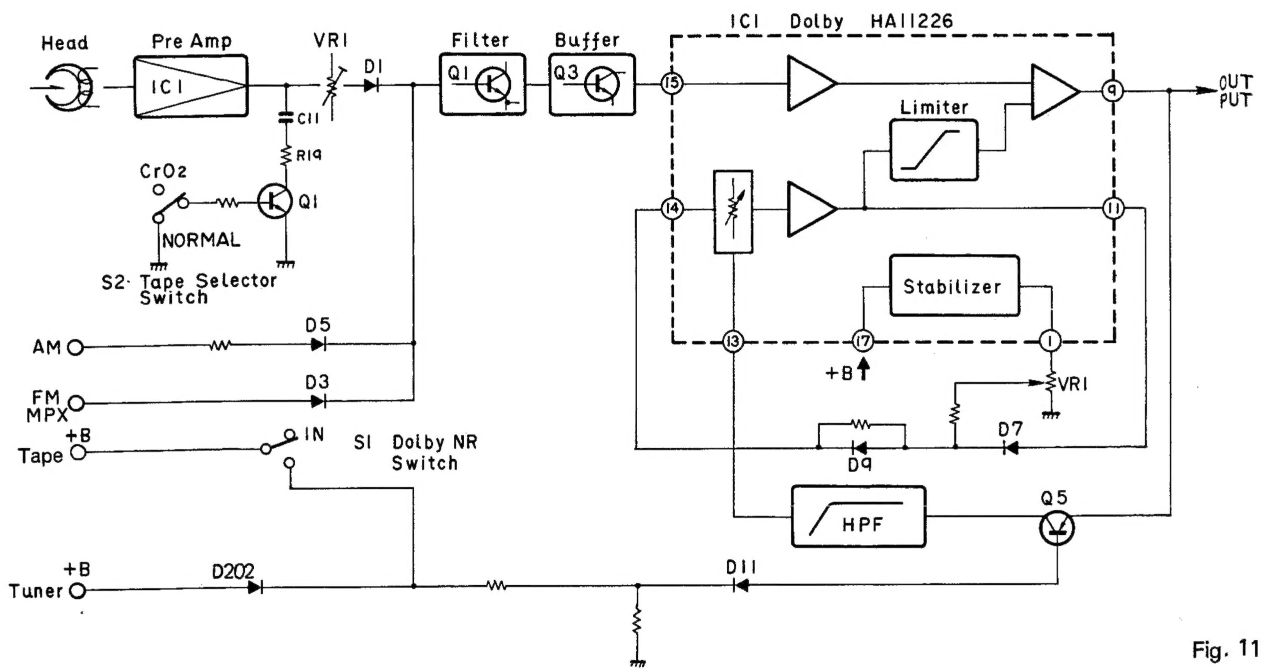


Fig. 11

• Noise Suppressor

The input signal containing the pulsive noise as illustrated in Waveform-1 is first impedance-converted by the buffer amplifier, then coupled to the gate circuit via the low-pass filter.
Meanwhile, the high-pass filter filters out only the pulsive noise component from the input signal and feeds the noise component to the noise detector where it is amplified and rectified. (See Waveform-2)
To cope with weak-signal noise, the noise detector is supported with the AGC (Automatic Gain Control) circuit. The noise component from the noise detector output is waveform-shaped by the mono-stable multivibrator (See Waveform-3). The output from the mono-stable multivibrator then couples to the gate circuit as a control-pulse array which is used to cut out only the pulsive noise component from the audio signal.
The memory provided at where holds the audiosignal level constant while the gate circuit is "closed".
The 19 kHz pilot-hold circuit serves to prevent stereo pilot-signal intermission.
The audio signal then sustains high-frequency-phase compensation to compensate for the phase shift due to the low-pass filter, then is coupled to the output terminal.

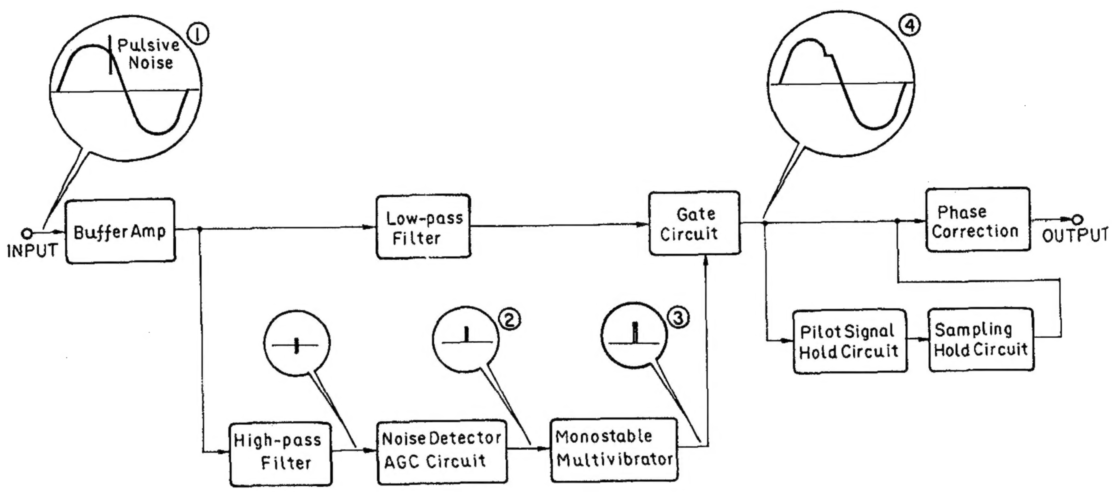


Fig. 12

3. ADJUSTMENT

3.1 FM IF ADJUSTMENT

• Connection Diagram

***Set the stereo unit for operation before making the adjustments.**

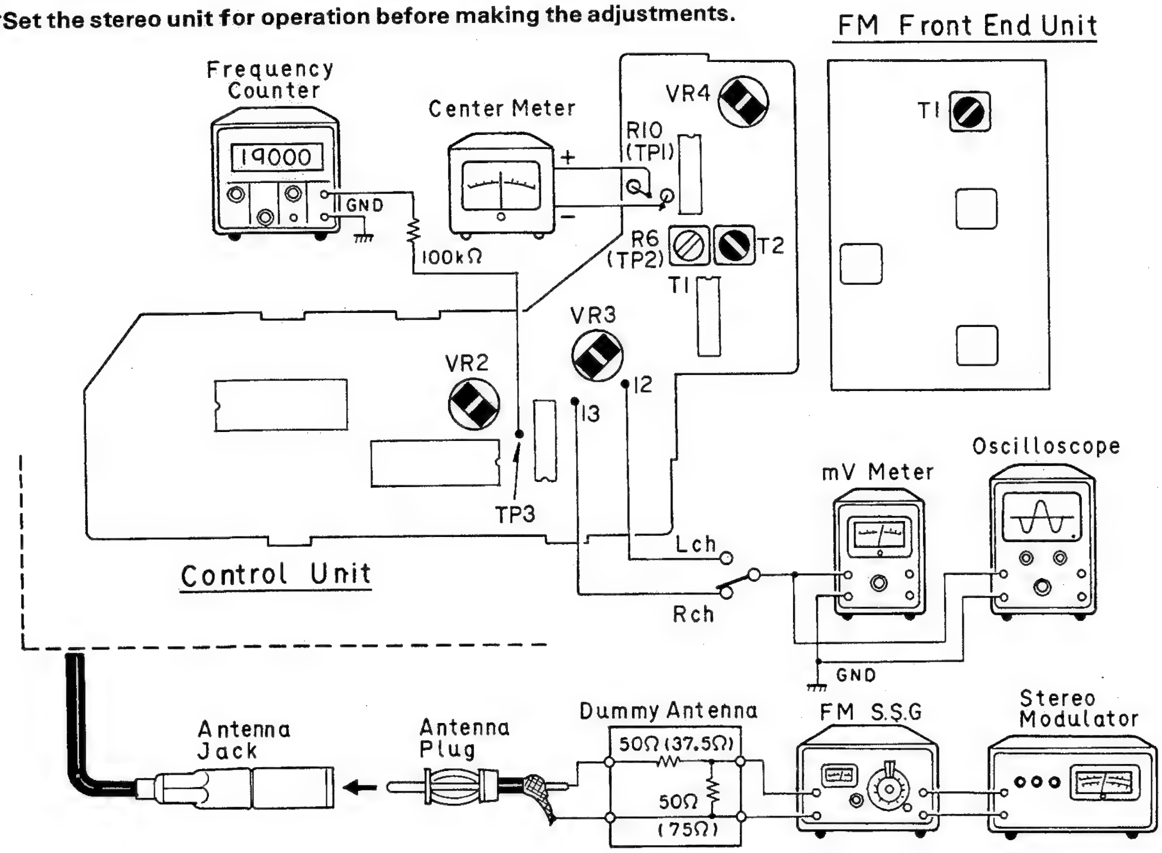


Fig. 13

• To Adjust

1. Add input signal of zero from SSG and adjust T2 so that the pointer of center meter (use one graduated for over 200μA) will come to the center.
2. Add output signal of 98 MHz 60 dB from SSG, multi-signal of modulated frequency 1 kHz of stereo modulator and tune to 98 MHz on the dial (the pointer of the center meter is at the center).
3. Adjust T1 (FM Front End Unit) so that separated signal will be minimal in its distortion factor.
4. Adjust FM IF by repeating the above procedure, steps 1, 2 and 3.

3.2 IF/MPX ADJUSTMENT

1. Shown in Fig. 13.
2. Select the band selector switch to stereo position.
3. Obtain non-modulation signal by setting SSG output at 60 dB (μV) 98 MHz. Adjust VR2 so that the frequency counter indicates 19 kHz ±30 Hz.
4. Obtain stereo modulation signal by setting SSG output at 60 dB (μV). Adjust VR3 to secure maximum separation.

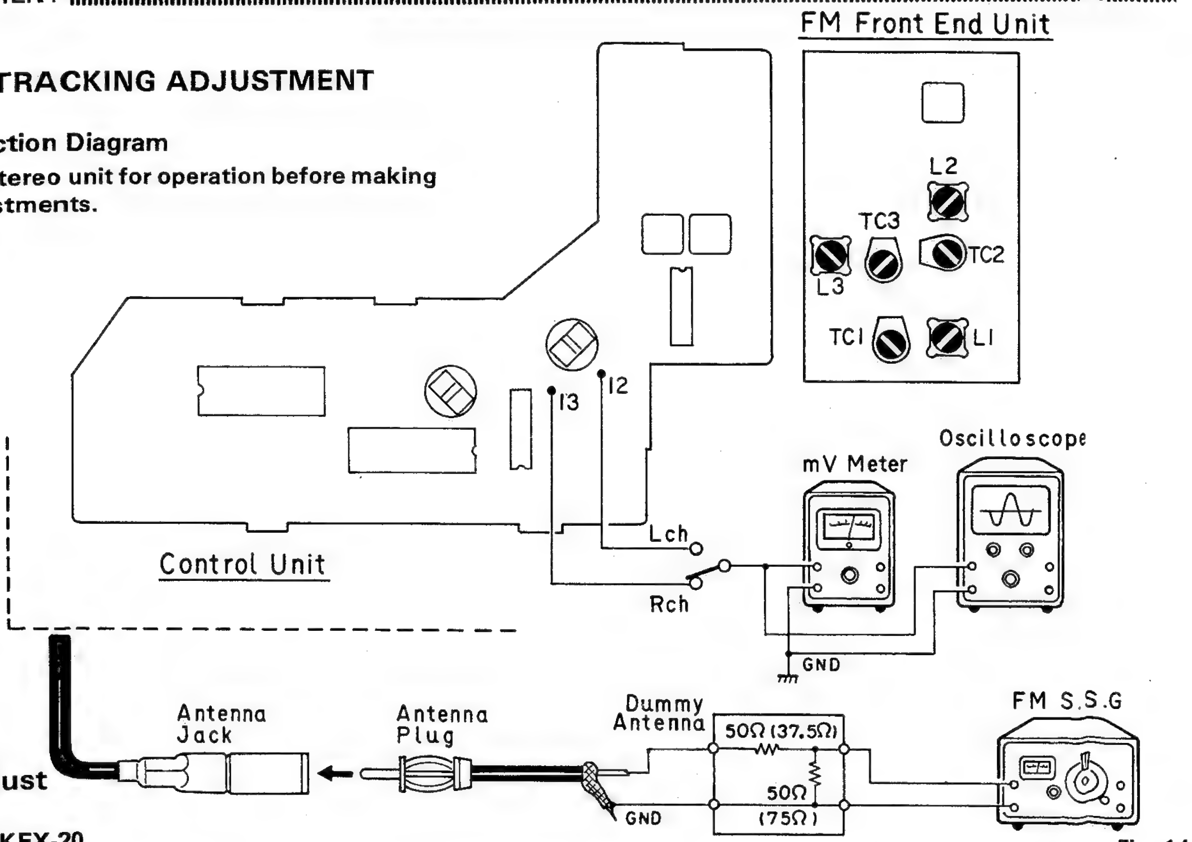
3.3 AUTO LEVEL ADJUSTMENT

1. Shown in Fig. 13.
2. Select the band selector switch to ARC position.
3. Set SSG at 98 MHz and tune using the tuning knob.
4. As SSG output gradually drops from 60 dB (μV) to low level, and SSG output reduced to 35 ±2 dB (μV), turn VR4 carefully and set it where stereo indicator is turned off.

3.4 FM TRACKING ADJUSTMENT

- **Connection Diagram**

***Set the stereo unit for operation before making the adjustments.**



- **To Adjust**

Fig. 14

In case of KEX-20

SSG Frequency	Pointer Position	Adjustment point	Note
1. 87.0 MHz (400 Hz, 100% modulation), output level 8 dB (μV)	Minimum	L3	87.0 MHz can be received
2. 108.6 MHz (400 Hz, 100% modulation), output level 8 dB (μV)	Maximum	TC3	108.6MHz can be received
3. Repeat items (1) and (2) alternately so that broadcast can be received at the frequency between 87.0 MHz and 108.6 MHz.			
4. 90 MHz (400 Hz, 100% modulation), output level 5 dB (μV)	Tuned position	L1, L2	Maximum output
5. 106 MHz (400 Hz, 100% modulation), output level 5 dB (μV)	Tuned position	TC1, TC2	Maximum output
6. Repeat items (4) and (5) alternately so that the mV meter indicates maximum output.			

In case of KEX-23

SSG Frequency	Pointer Position	Adjustment Point	Note
1. 87.0 MHz (400 Hz, 100% modulation), output level 8 dB (μV)	Minimum	L3	87.0 MHz can be received
2. 105.0 MHz (400 Hz, 100% modulation), output level 8 dB (μV)	Maximum	TC3	105.0 MHz can be received
3. Repeat items (1) and (2) alternately so that broadcast can be received at the frequency between 87.0 MHz and 105.0 MHz.			
4. 90 MHz (400 Hz, 100% modulation), output level 5 dB (μV)	Tuned position	L1, L2	Maximum output
5. 104 MHz (400 Hz, 100% modulation), output level 5 dB (μV)	Tuned position	TC1, TC2	Maximum output
6. Repeat items (4) and (5) alternately so that the mV meter indicates maximum output.			

3.5 AM IF ADJUSTMENT (KEX-20)

• Connection Diagram

***Set the stereo unit for operation before making the adjustments.**

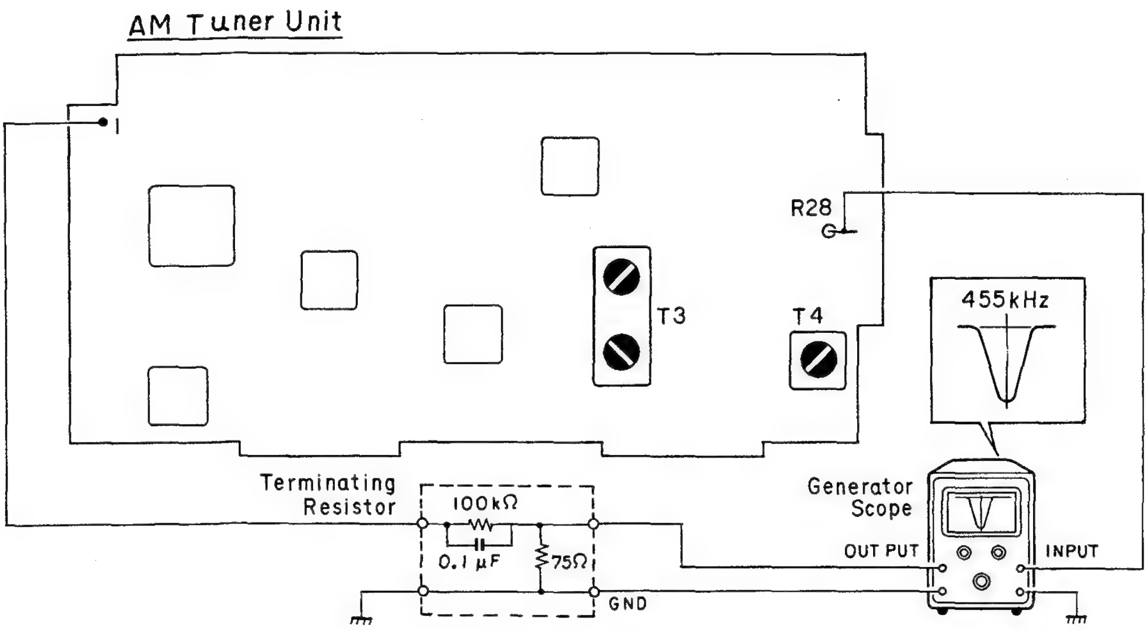


Fig. 15

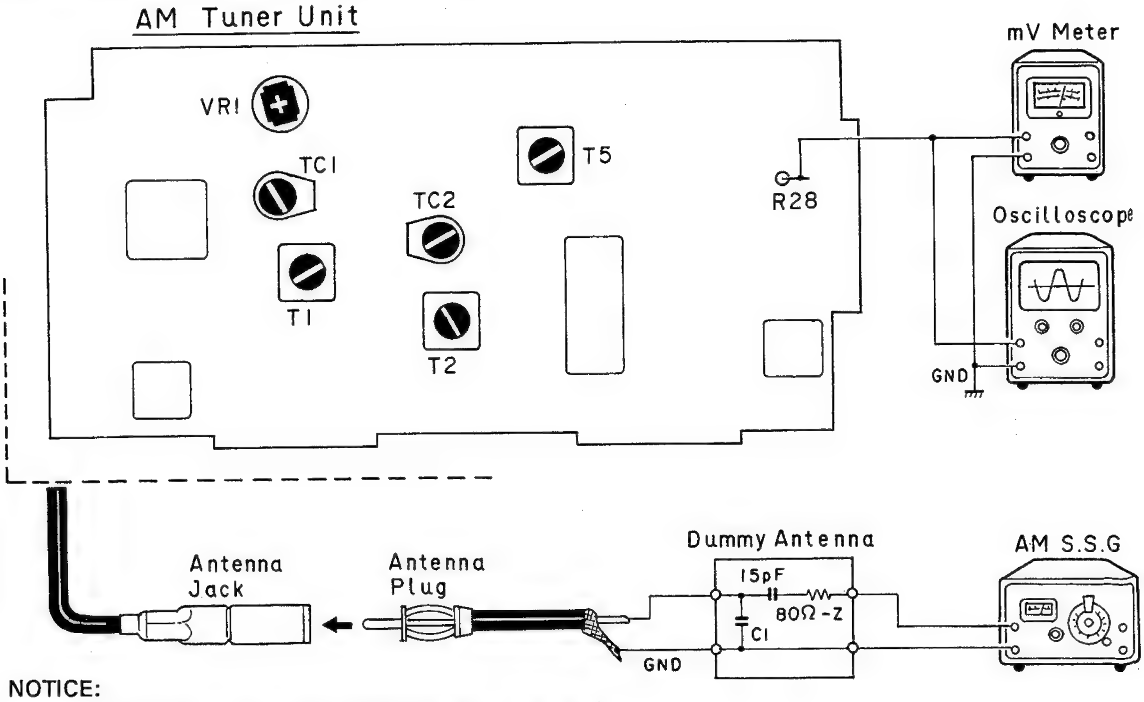
• To Adjust

1. Set Generator Scope as follows:
   Frequency centering on sweep . . . . 455 kHz
   Input level 0.3Vp-p/cm
   Output level . . . . 3mV~10mV
2. Tune to a nearby, 1,600 kHz station.
3. Turn the cores of T3 and T4, and adjust so that U-curve will be at maximum amplitude and best symmetry.

3.6 AM TRACKING ADJUSTMENT (KEX-20)

• Connection Diagram

*Set the stereo unit for operation before making the adjustments.



NOTICE:
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of the S.S.G.

Fig. 16

• To Adjust

SSG Frequency	Pointer Position	Adjustment Point	Note
1. 1,630 kHz (400 Hz, 30% modulation), output level 30 dB (μV)	Maximum	T5	1,630 kHz can be received
2. 515 kHz (400 Hz, 30% modulation), output level 30 dB (μV)	Minimum	VR1	515 kHz can be received
3. 600 kHz (400 Hz, 30% modulation), output level 30 dB (μV)	Tune to 600 kHz	T1, T2	mV meter at maximum
4. 1,400 kHz (400 Hz, 30% modulation), output level 30 dB (μV)	Tune to 1,400 kHz	TC1, TC2	mV meter at maximum
5. Repeat items (3) and (4) alternately so that the mV meter indicates maximum output.			

3.7 MW/LW IF ADJUSTMENT (KEX-23)

• Connection Diagram

***Set the stereo unit for operation before making the adjustments.**

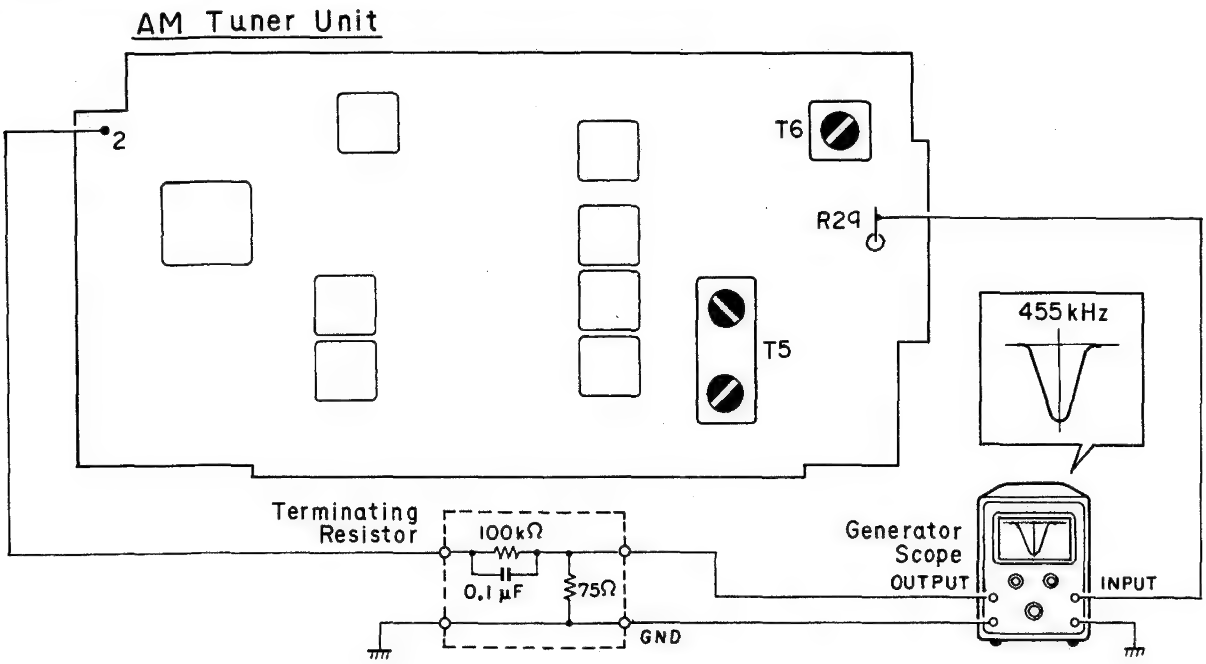


Fig. 17

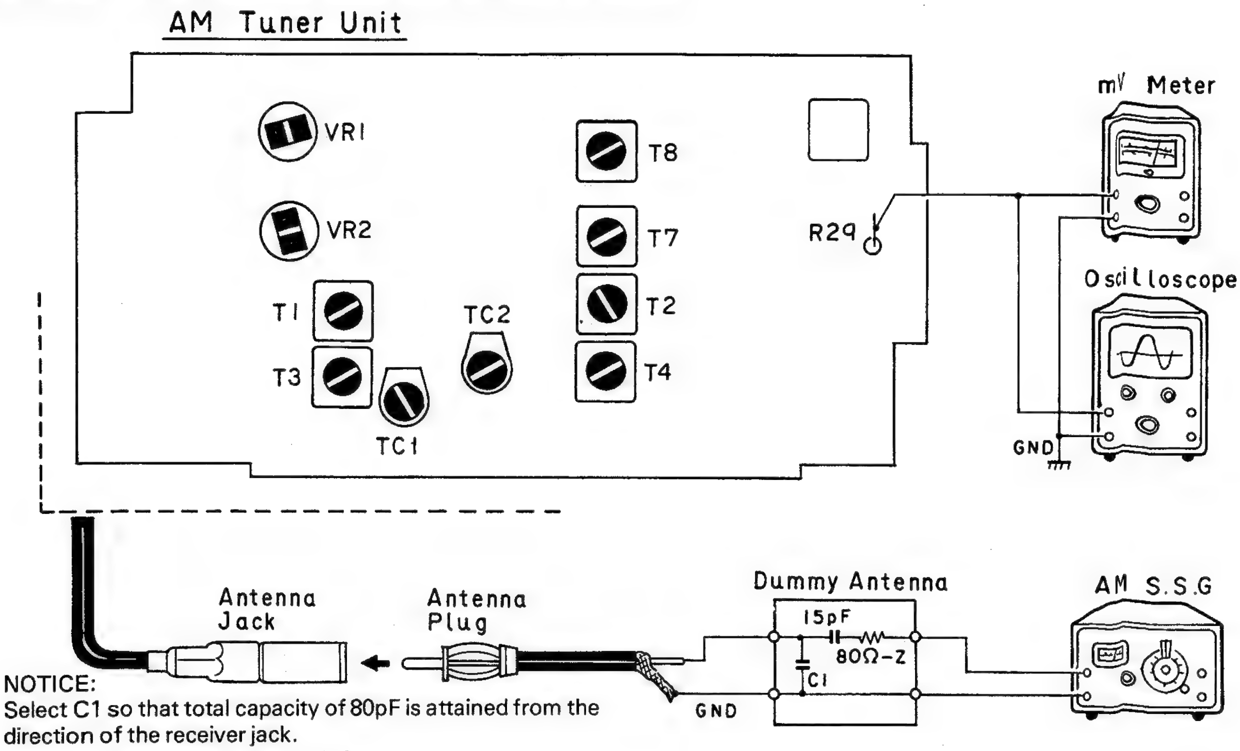
• To Adjust

1. Set Generator Scope as follows:
   Frequency centering on sweep . . . . 455 kHz
   Input level 0.3Vp-p/cm
   Output level . . . . 3mV∿10mV
2. Tune to a nearby 1,600 kHz station of MW.
3. Turn the cores of T5 and T6, and adjust so that U-curve will be at maximum amplitude and best symmetry.

3.8 MW/LW TRACKING ADJUSTMENT (KEX-23)

• Connection Diagram

*Set the stereo unit for operation before making the adjustments.



NOTICE:
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of the S.S.G.

Fig. 18

• To Adjust

In case of MW (Select the band selector switch to MW)

SSG Frequency	Pointer Position	Adjustment	Note
1. 1,630 kHz (400 Hz, 30% modulation), output level 30 dB (μV)	Maximum	T7	1,630 kHz can be received
2. 515 kHz (400 Hz, 30% modulation), output level 30 dB (μV)	Minimum	VR1	515 kHz can be received
3. 600 kHz (400 Hz, 30% modulation), output level 30 dB (μV)	Tune to 600 kHz	T1, T4	mV meter maximum
4. 1,400 kHz (400 Hz, 30% modulation), output level 30 dB (μV)	Tune to 1,400 kHz	TC1, TC2	mV meter maximum
5. Repeat items (3) and (4) alternately so that the mV meter indicates maximum output.			

In case of LW (Select the band selector switch to LW)

SSG Frequency	Pointer Position	Adjustment	Note
1. 295 kHz (400 Hz, 30% modulation), output level 35 dB (μV)	Maximum	T8	295 kHz can be received
2. 145 kHz (400 Hz, 30% modulation), output level 35 dB (μV)	Minimum	VR2	145 kHz can be received
3. 215 kHz (400 Hz, 30% modulation), output level 35 dB (μV)	Tune to 215 kHz	T2, T3	mV meter maximum

3.9 DOLBY NR LAW ADJUSTMENT

• Connection Diagram

***Set the stereo unit for operation before making the adjustments.**

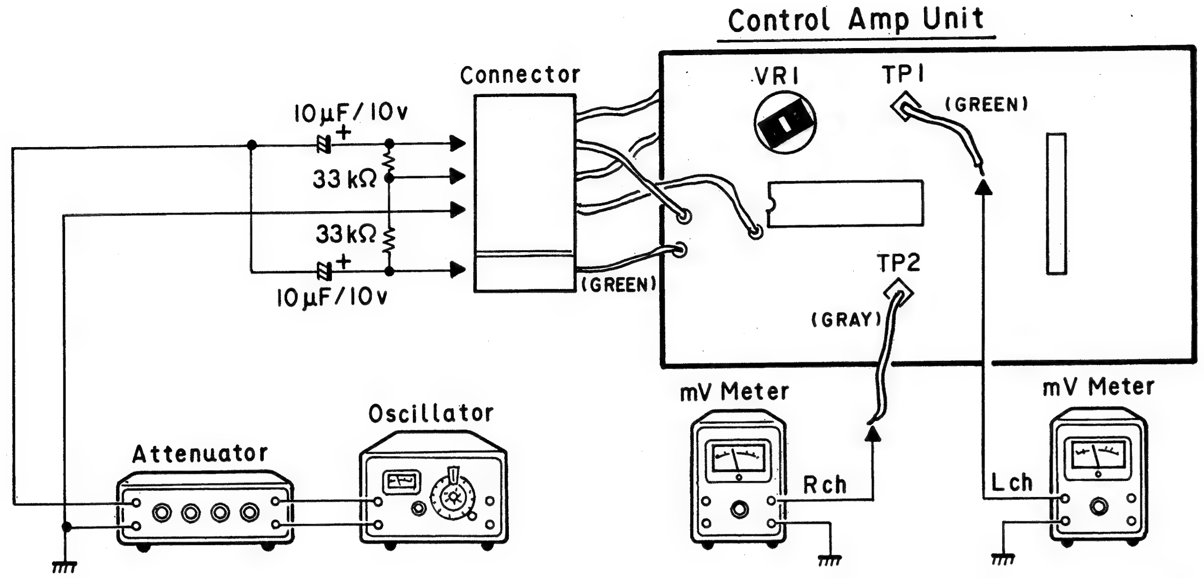


Fig. 19

• To Adjust

1. Load a cassette tape and set the unit to the playback mode.
2. Set the Dolby NR switch to OUT and apply a 5kHz input frequency signal from the oscillator. Adjust the attenuator so that mV meter pointer deflects to 58.7mV (−22.4dBs).
3. Now set the Dolby NR switch to IN and adjust VR1 so that mV meter pointer deflects to 23.4mV (−30.4dBs).

3.10 DOLBY NR LEVEL ADJUSTMENT

• Connection Diagram

***Set the stereo unit for operation before making the adjustments.**

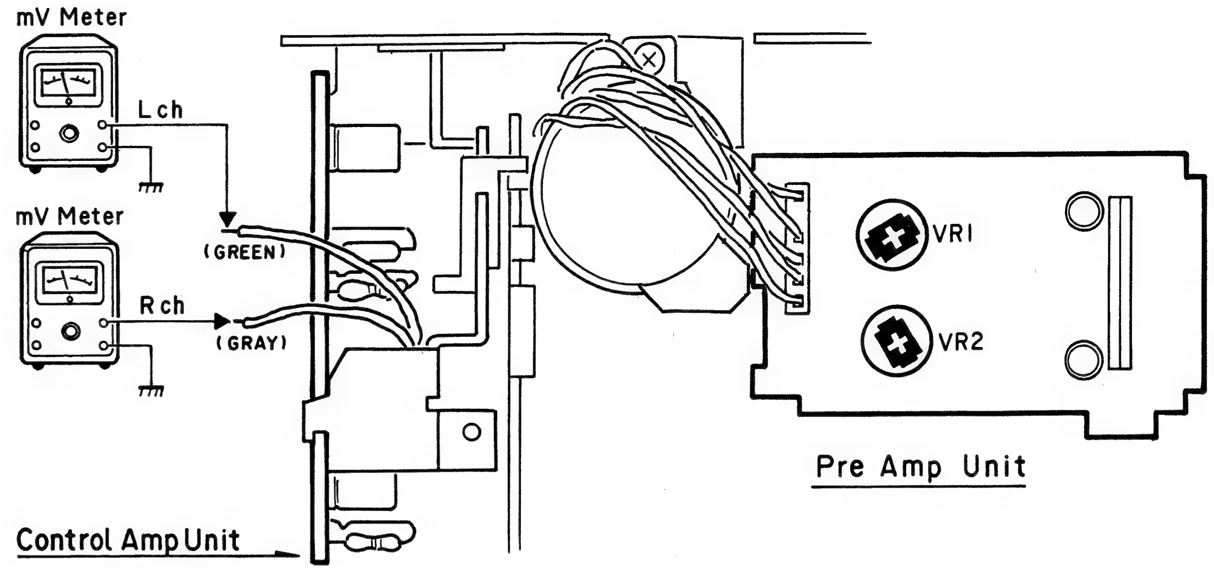


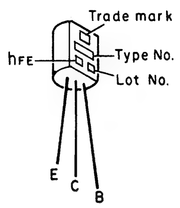
Fig. 20

• To Adjust

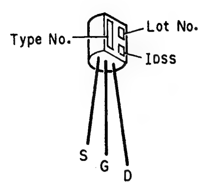
1. Play back the CT-150 (400Hz-200nwb/m) test tape and adjust VR1 (Lch) and VR2 (Rch) so that the mV meter pointer deflects to 775mV (0dBs).

• IC's and Transistors

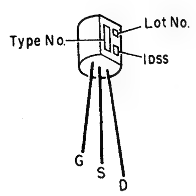
2SC828



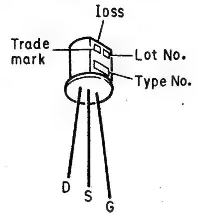
2SK30A



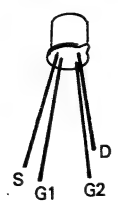
2SK49



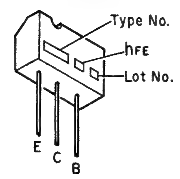
2SK19



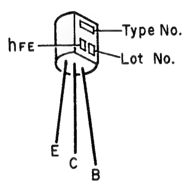
SD306PA



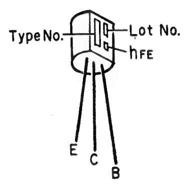
2SA786



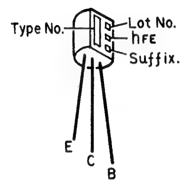
2SA826
2SA826LN
2SC1740LN



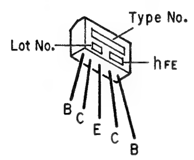
2SA952
2SC732
2SC1674
2SC1675
2SC1815



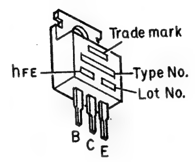
2SA733
2SC945L



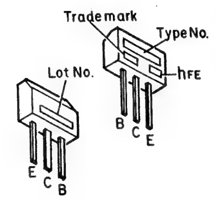
2SA798
2SC1583



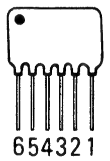
2SA473



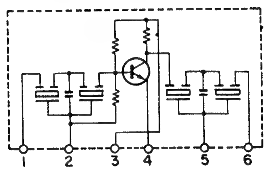
2SC460
2SC535



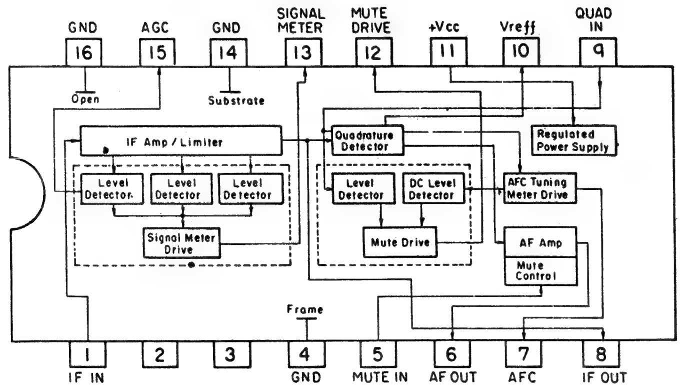
H8D1202



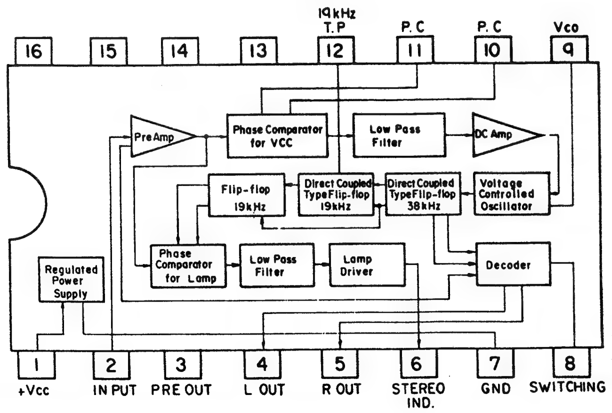
H8D1202



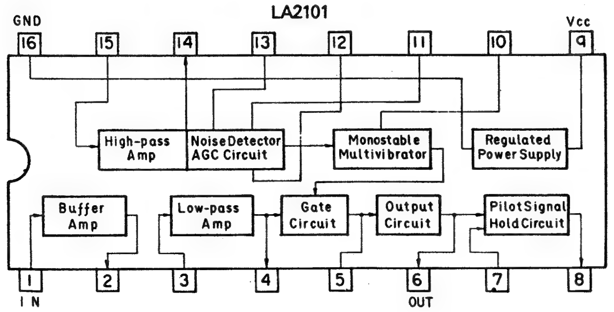
LA1230P



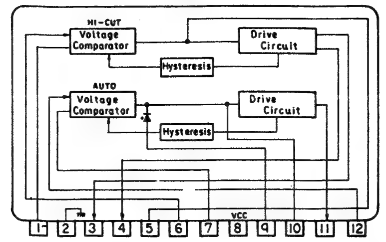
LA3350P



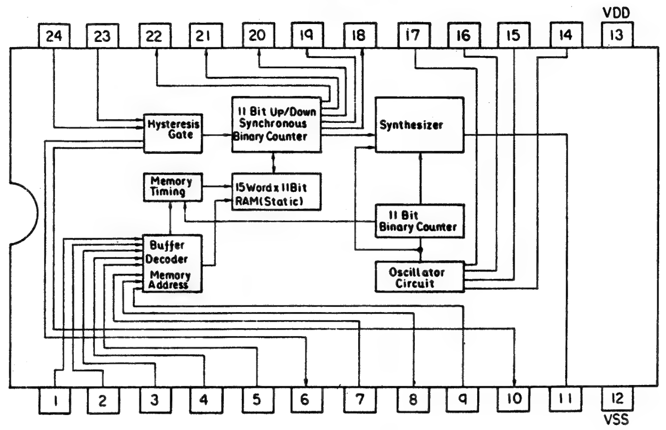
LA2101



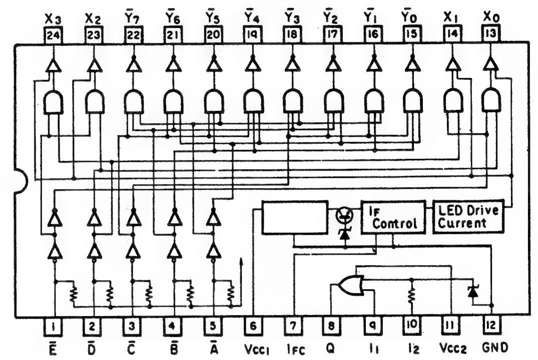
PST-506



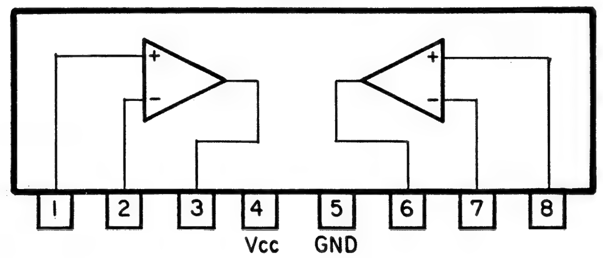
PD1002



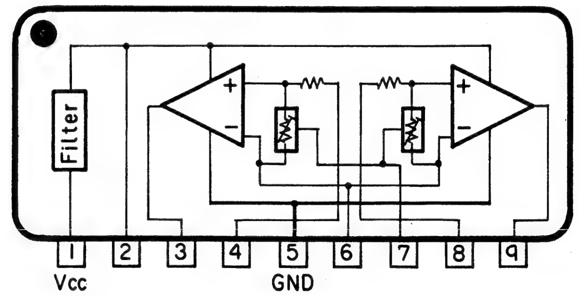
PD4003



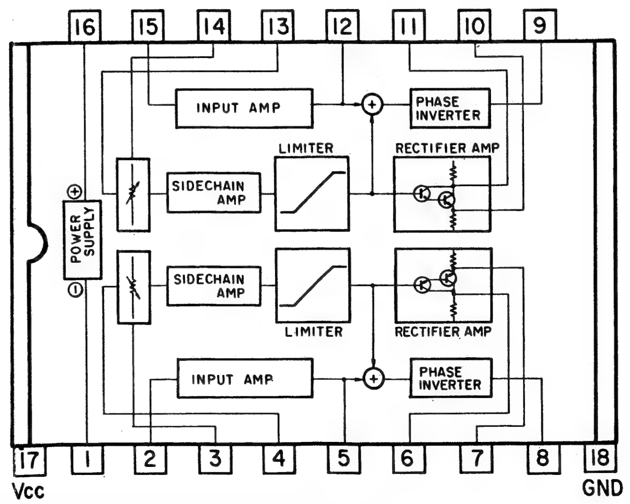
MB3106



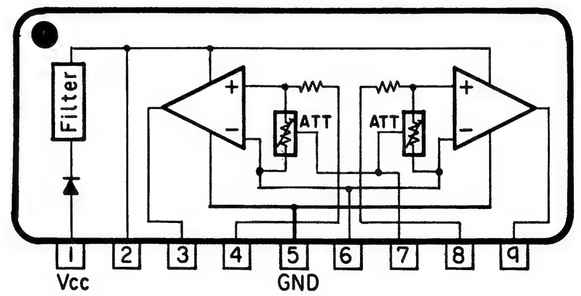
LAP-501



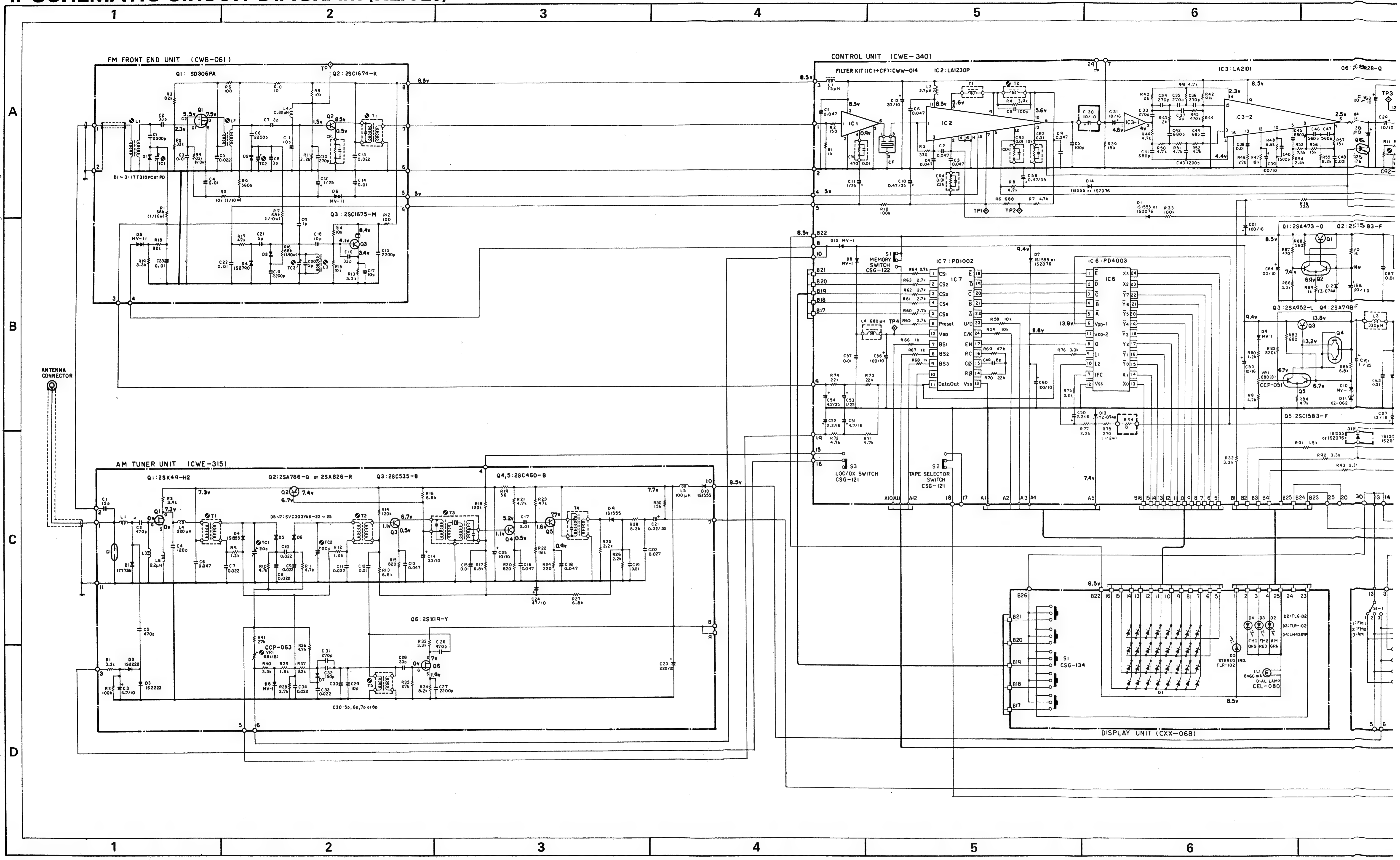
HA11226



LAP-502



4. SCHEMATIC CIRCUIT DIAGRAM (KEX-20)



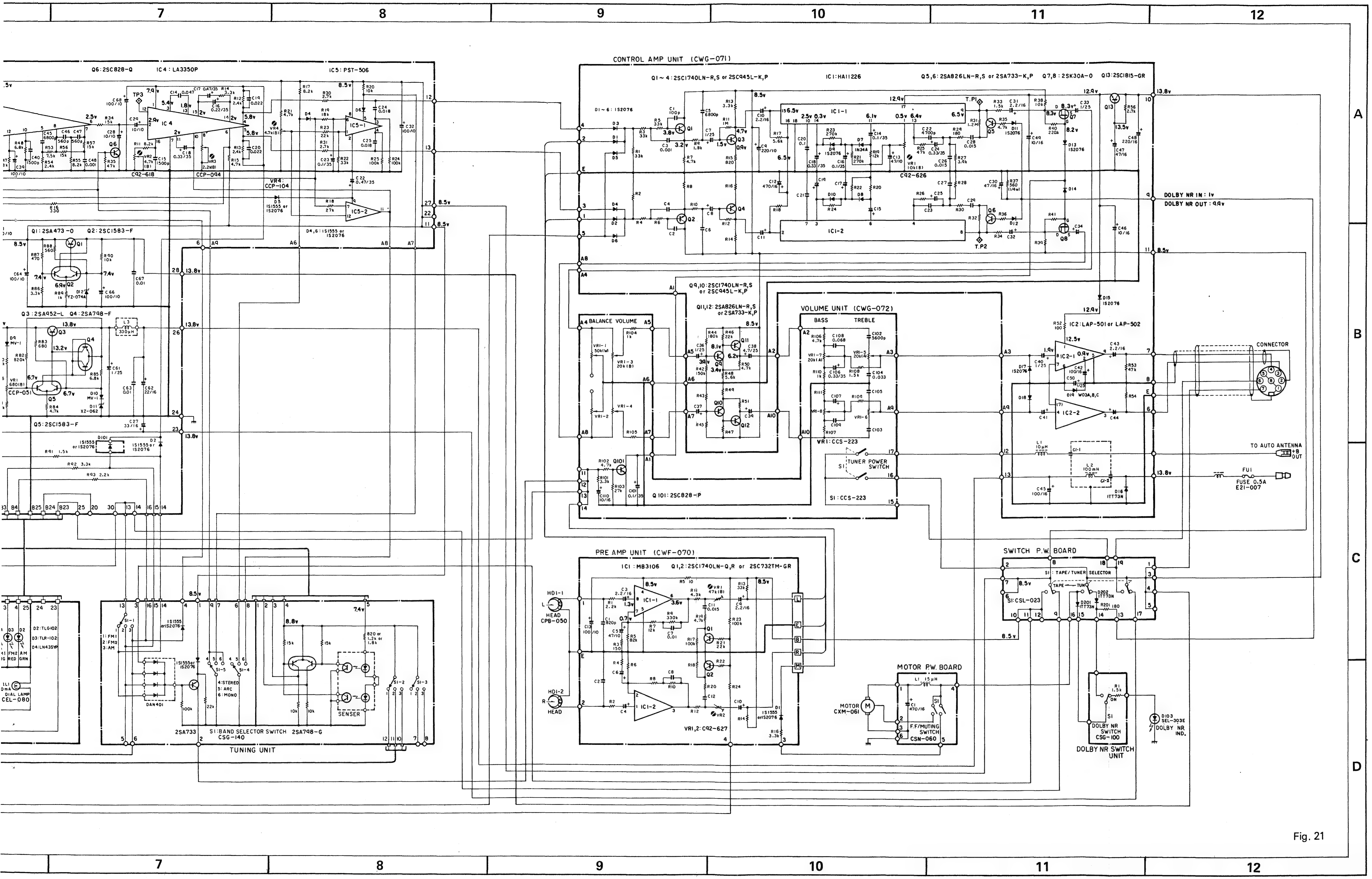
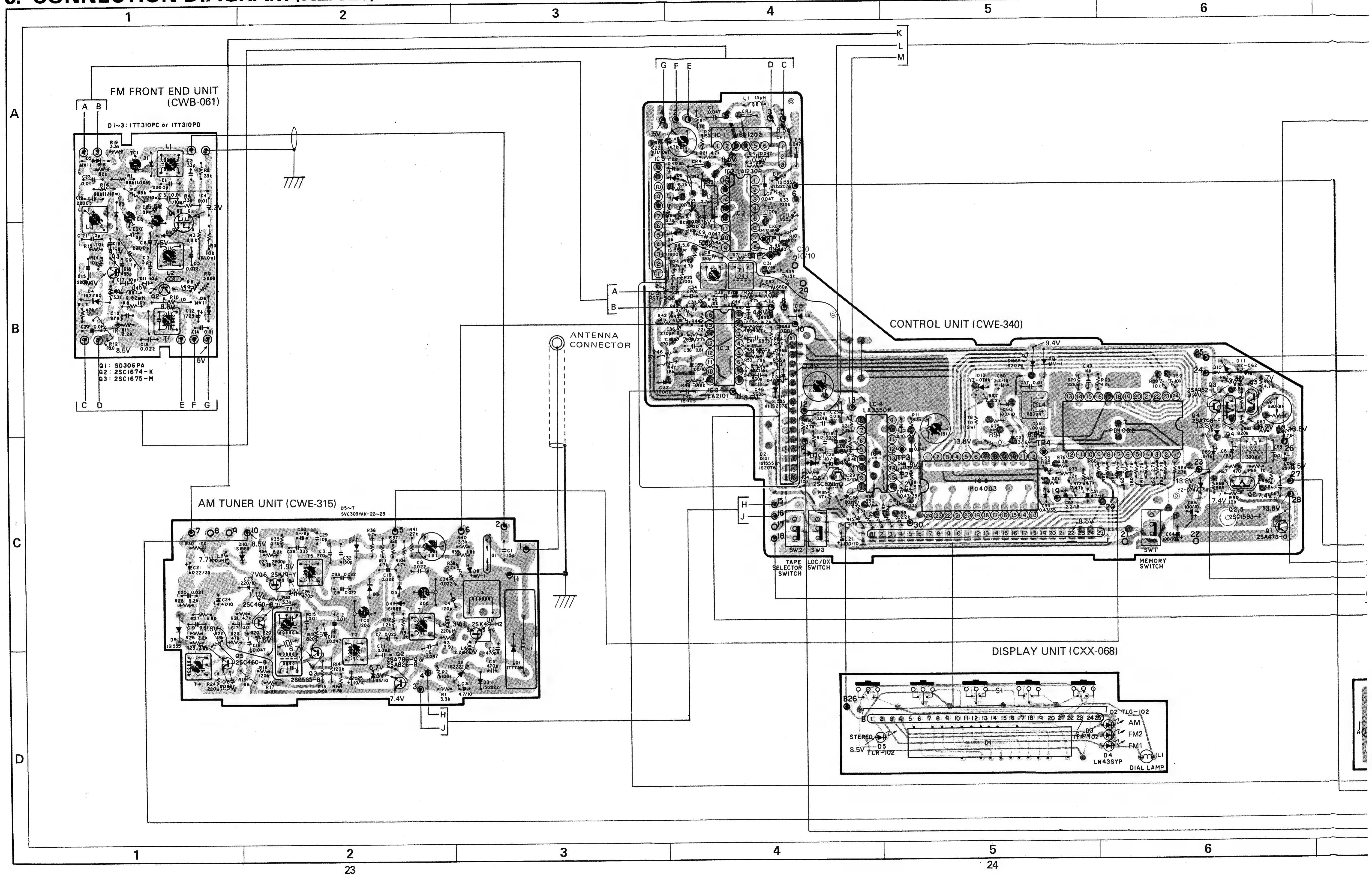

CONTROL AMP UNIT (CWG-071)
VOLUME UNIT (CWG-072)
BALANCE VOLUME
BASS
TREBLE
TUNER POWER SWITCH
S1 : CCS-223
Q 101 : 2SC828-P
PRE AMP UNIT (CWF-070)
IC1 : MB3106
HEAD CPB-050
VR1,2 : C92-627
TUNING UNIT
S1 : BAND SELECTOR SWITCH
CSG-140
SENSER
MOTOR P.W. BOARD
MOTOR CXM-061
F.F/MUTING SWITCH CSN-060
SWITCH P.W. BOARD
S1 : TAPE/TUNER SELECTOR
S1 : CSL-023
DOLBY NR SWITCH CSG-100
DOLBY NR SWITCH UNIT
DOLBY NR IND.
IC2 : LAP-501 or LAP-502
CONNECTOR
TO AUTO ANTENNA
FUSE 0.5A E21-007
DOLBY NR IN : 1v
DOLBY NR OUT : 9.9v
IC4 : LA3350P
IC5 : PST-506
DIAL LAMP CEL-080
7
8
9
10
11
12
A
B
C
D

Fig. 21

5. CONNECTION DIAGRAM (KEX-20)



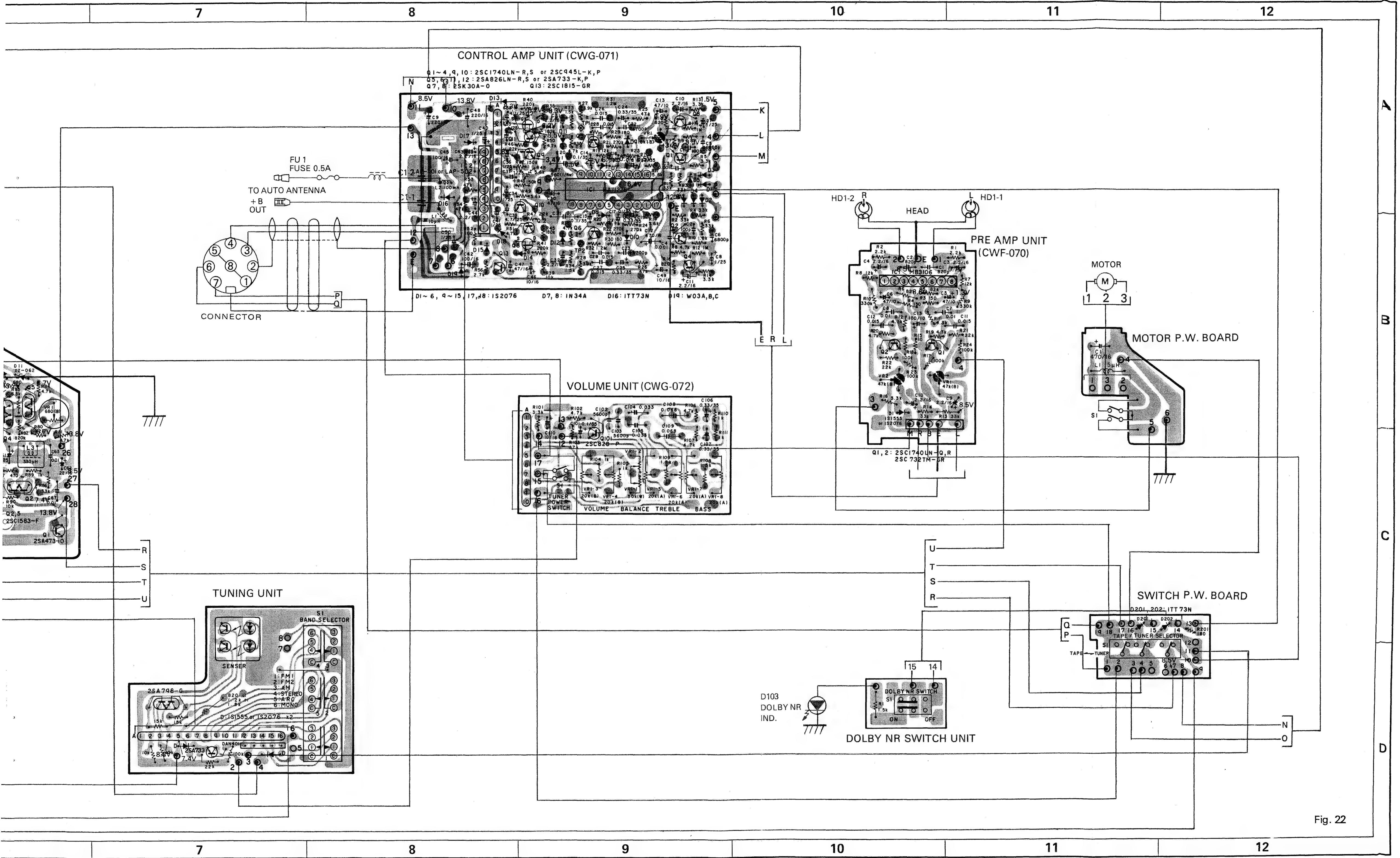
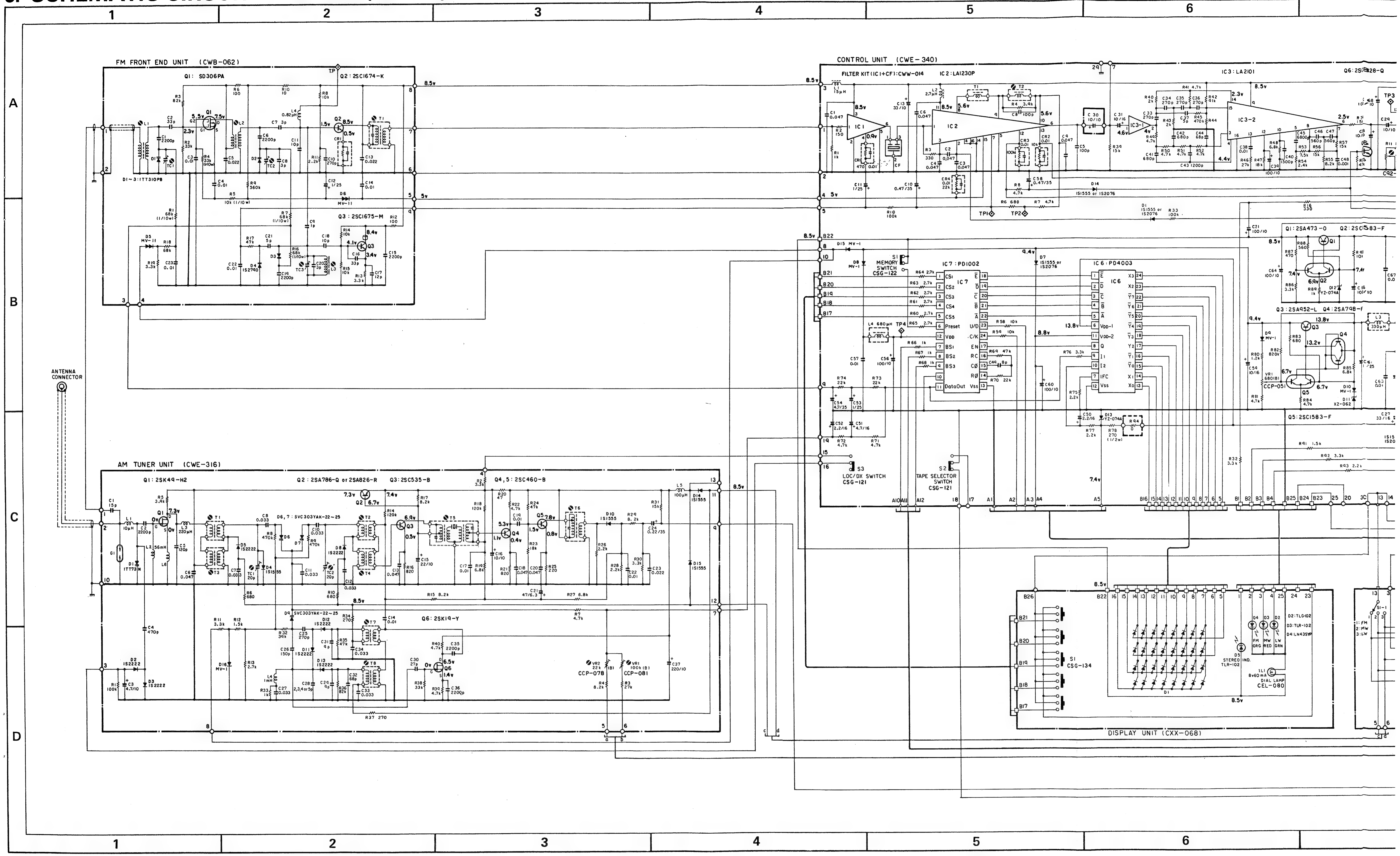

7
8
9
10
11
12
A
B
C
D
CONTROL AMP UNIT (CWG-071)
Q1~4, 9, 10 : 2SC1740LN-R,S or 2SC945L-K,P
Q5, 6, 11, 12 : 2SA826LN-R,S or 2SA733-K,P
Q7, 8 : 2SK30A-O
Q13 : 2SC1815-GR
D1~6, 9~15, 17, 18 : 1S2076
D7, 8 : 1N34A
D16 : ITT73N
D19 : W03A,B,C
FU 1
FUSE 0.5A
TO AUTO ANTENNA
+B
OUT
CONNECTOR
HD1-2
HD1-1
HEAD
PRE AMP UNIT
(CWF-070)
Q1, 2 : 2SC1740LN-Q,R
2SC732TM-GR
MOTOR
MOTOR P.W. BOARD
VOLUME UNIT (CWG-072)
TUNER POWER SWITCH
VOLUME
BALANCE
TREBLE
BASS
TUNING UNIT
S1
BAND SELECTOR
SENSER
1: FM1
2: FM2
3: AM
4: STEREO
5: ARC
6: MONO
SWITCH P.W. BOARD
D201, 202: ITT73N
TAPE / TUNER SELECTOR
D103
DOLBY NR
IND.
DOLBY NR SWITCH
DOLBY NR SWITCH UNIT

Fig. 22

6. SCHEMATIC CIRCUIT DIAGRAM (KEX-23)



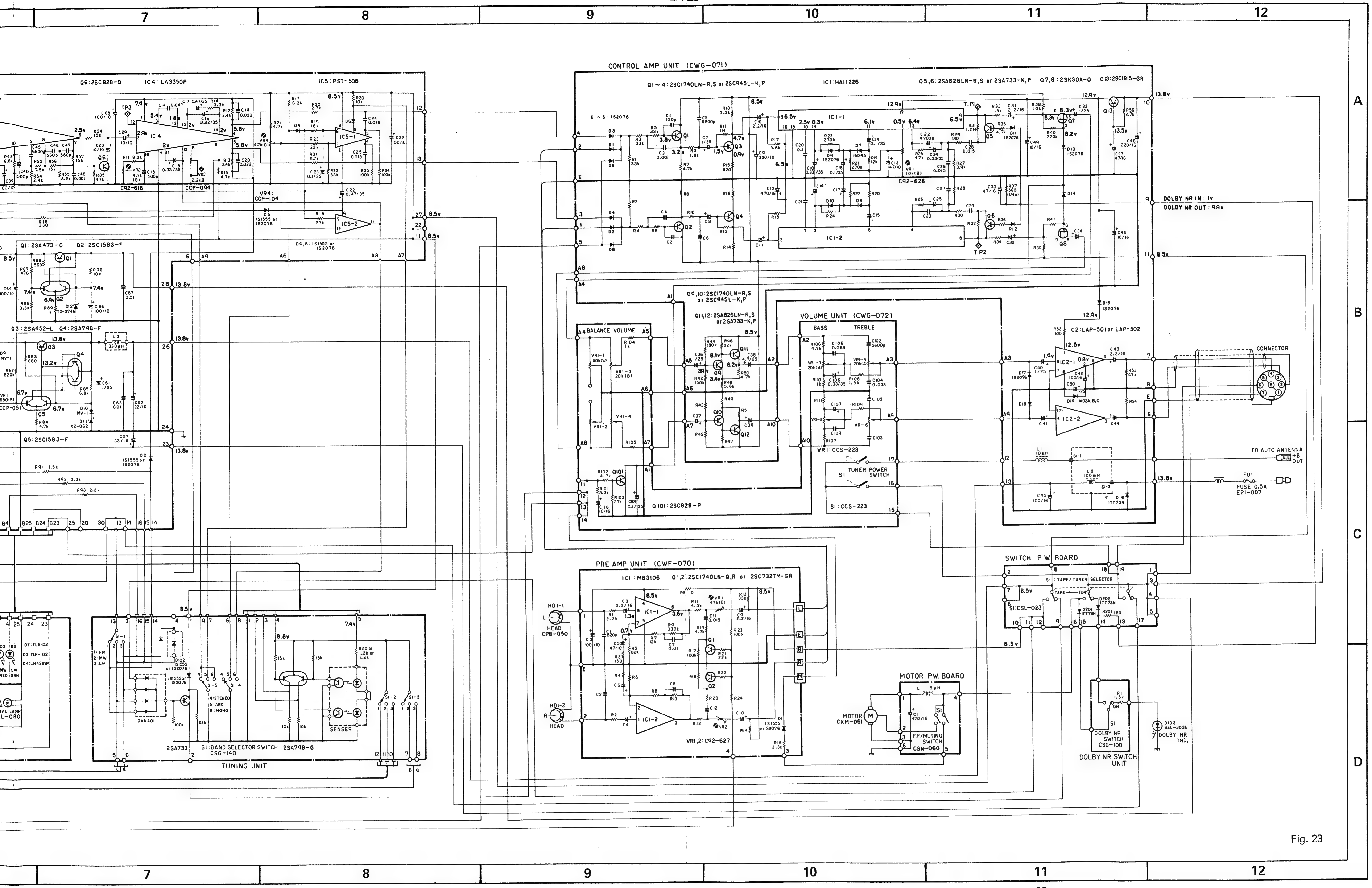
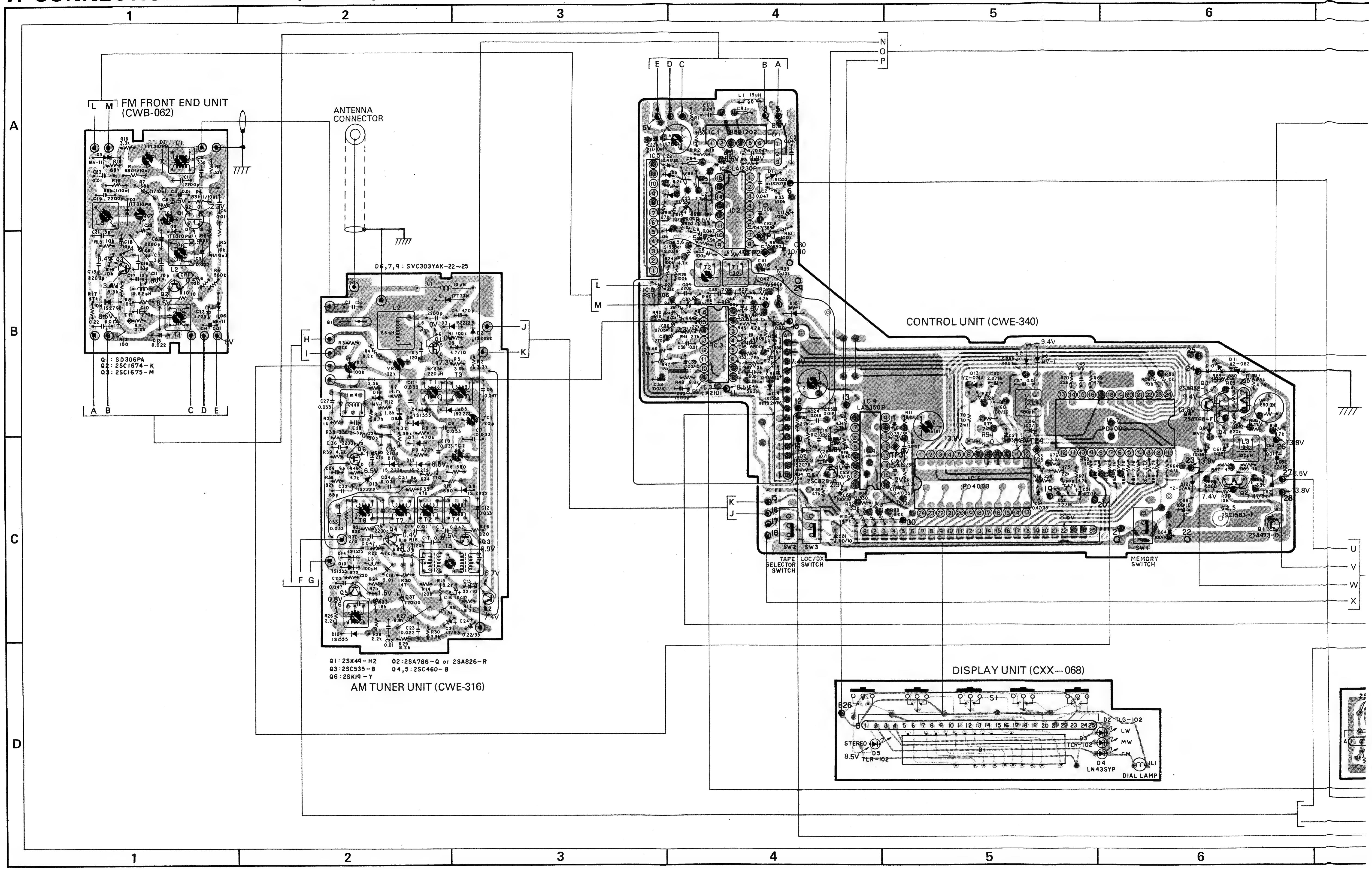

CONTROL AMP UNIT (CWG-071)
Q1~4: 2SC1740LN-R,S or 2SC945L-K,P
IC1: HA11226
Q5,6: 2SA826LN-R,S or 2SA733-K,P
Q7,8: 2SK30A-O
Q13: 2SC1815-GR
Q6: 2SC828-Q
IC4: LA3350P
IC5: PST-506
Q1: 2SA473-O
Q2: 2SC1583-F
Q3: 2SA952-L
Q4: 2SA798-F
Q5: 2SC1583-F
DOLBY NR IN: 1v
DOLBY NR OUT: 9.9v
Q9,10: 2SC1740LN-R,S or 2SC945L-K,P
Q11,12: 2SA826LN-R,S or 2SA733-K,P
BALANCE VOLUME
VOLUME UNIT (CWG-072)
BASS
TREBLE
VR1: CCS-223
TUNER POWER SWITCH
S1: CCS-223
Q101: 2SC828-P
IC2: LAP-501 or LAP-502
CONNECTOR
TO AUTO ANTENNA +B OUT
FUSE 0.5A
E21-007
PRE AMP UNIT (CWF-070)
IC1: MB3106
Q1,2: 2SC1740LN-Q,R or 2SC732TM-GR
HEAD
CPB-050
VR1,2: C92-627
SWITCH P.W. BOARD
S1: TAPE/TUNER SELECTOR
S1: CSL-023
MOTOR P.W. BOARD
MOTOR
CXM-061
F.F/MUTING SWITCH
CSN-060
DOLBY NR SWITCH
CSG-100
DOLBY NR SWITCH UNIT
DOLBY NR IND.
D103 SEL-303E
S1: BAND SELECTOR SWITCH
CSG-140
2SA733
2SA798-G
TUNING UNIT
SENSER
DAN401
1: FM
2: MW
3: LW
4: STEREO
5: ARC
6: MONO
D2: TLG102
D3: TLR-102
D4: LN435YP

Fig. 23

7. CONNECTION DIAGRAM (KEX-23)



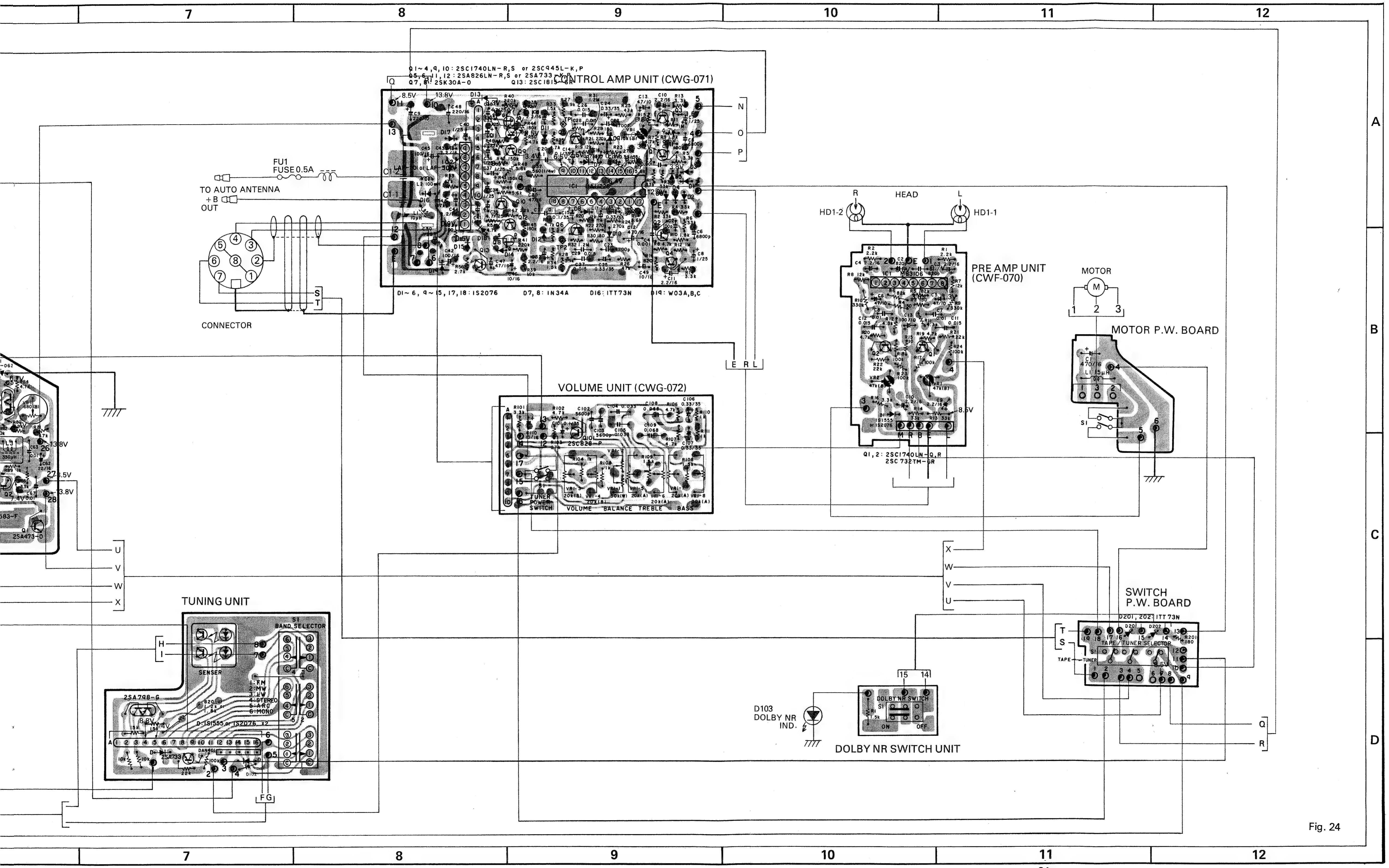

7
8
9
10
11
12
A
B
C
D
Q1~4, 9, 10 : 2SC1740LN-R,S or 2SC945L-K,P
Q5, 6, 11, 12 : 2SA826LN-R,S or 2SA733-K,P
Q7, 8 : 2SK30A-O
Q13 : 2SC1815-GR
CONTROL AMP UNIT (CWG-071)
D1~6, 9~15, 17, 18 : IS2076
D7, 8 : IN34A
D16 : ITT73N
D19 : W03A,B,C
FU1
FUSE 0.5A
TO AUTO ANTENNA
+B
OUT
CONNECTOR
N
O
P
S
T
E R L
HEAD
R
L
HD1-2
HD1-1
PRE AMP UNIT
(CWF-070)
Q1, 2 : 2SC1740LN-Q,R
2SC 732TM-GR
MOTOR
MOTOR P.W. BOARD
VOLUME UNIT (CWG-072)
TUNER POWER SWITCH
VOLUME
BALANCE
TREBLE
BASS
U
V
W
X
TUNING UNIT
S1 BAND SELECTOR
SENSER
1-FM
2-MW
3-LW
4-STEREO
5-ARC
6-MONO
H
I
F G
X
W
V
U
SWITCH
P.W. BOARD
D201, 202 : ITT 73N
TAPE / TUNER SELECTOR
TAPE
TUNER
T
S
D103
DOLBY NR
IND.
DOLBY NR SWITCH
DOLBY NR SWITCH UNIT
ON
OFF
15
14
Q
R

Fig. 24

8. CABINET EXPLODED VIEW

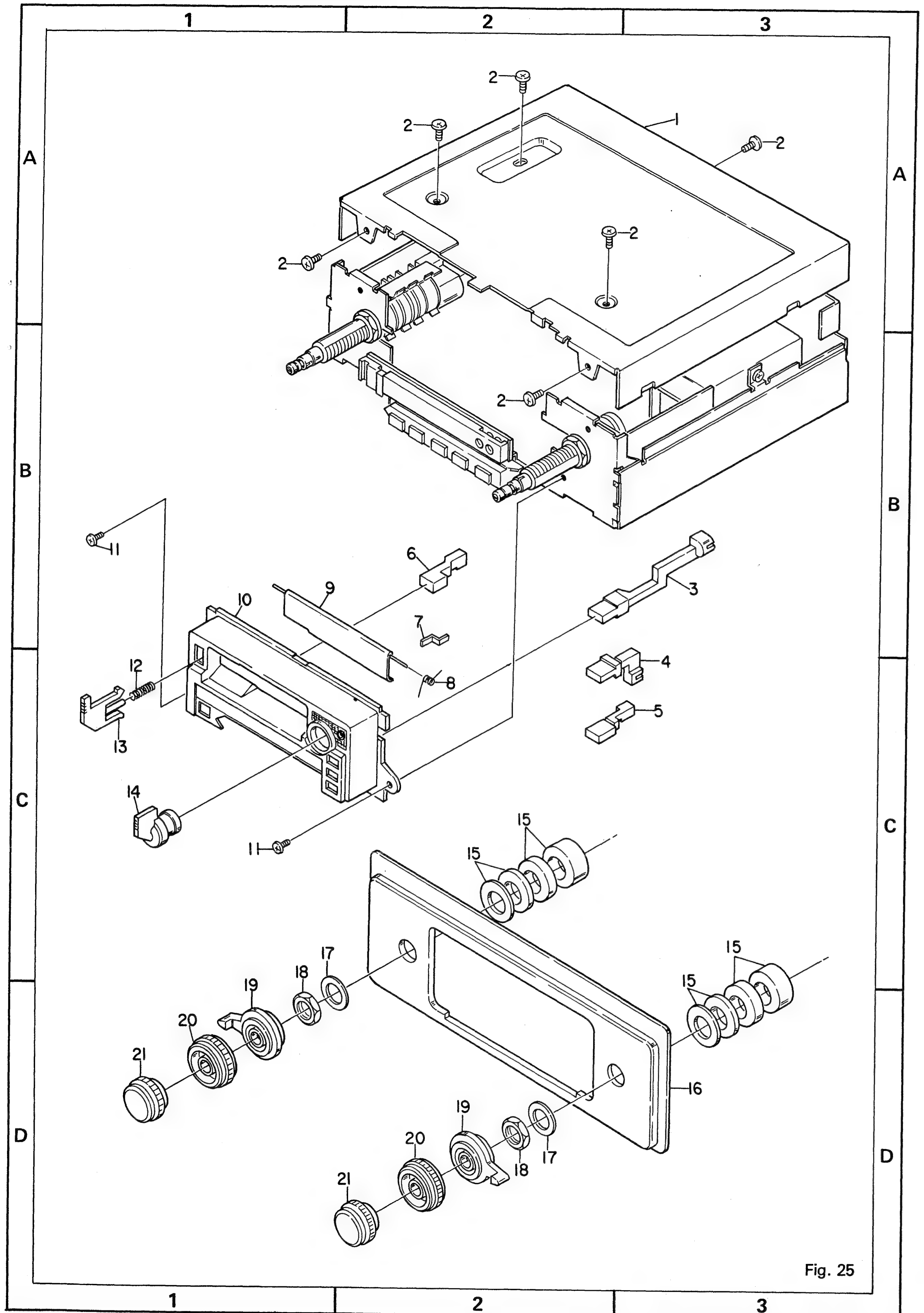
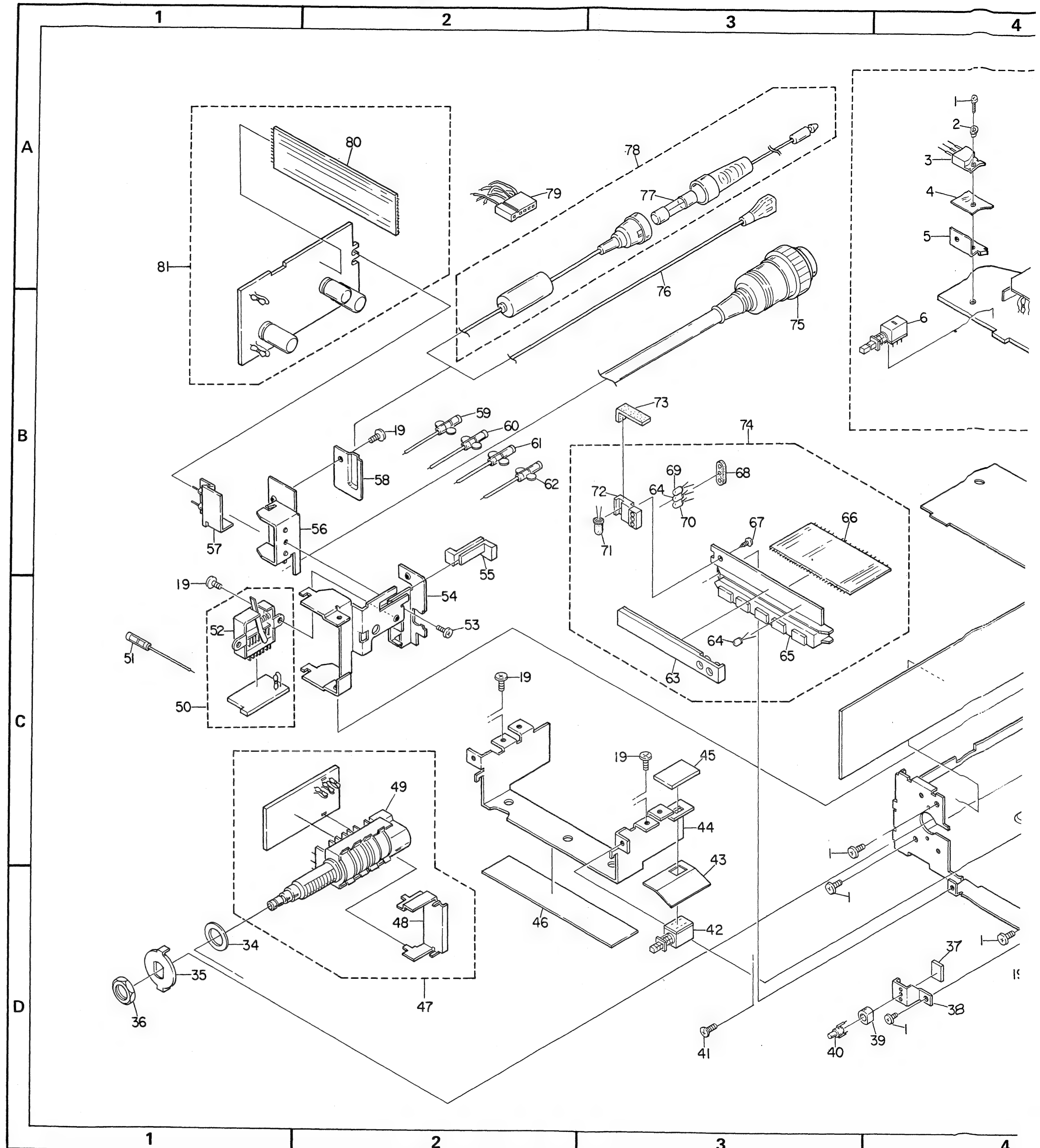


Fig. 25

9. CHASSIS EXPLODED VIEW



4	5	6

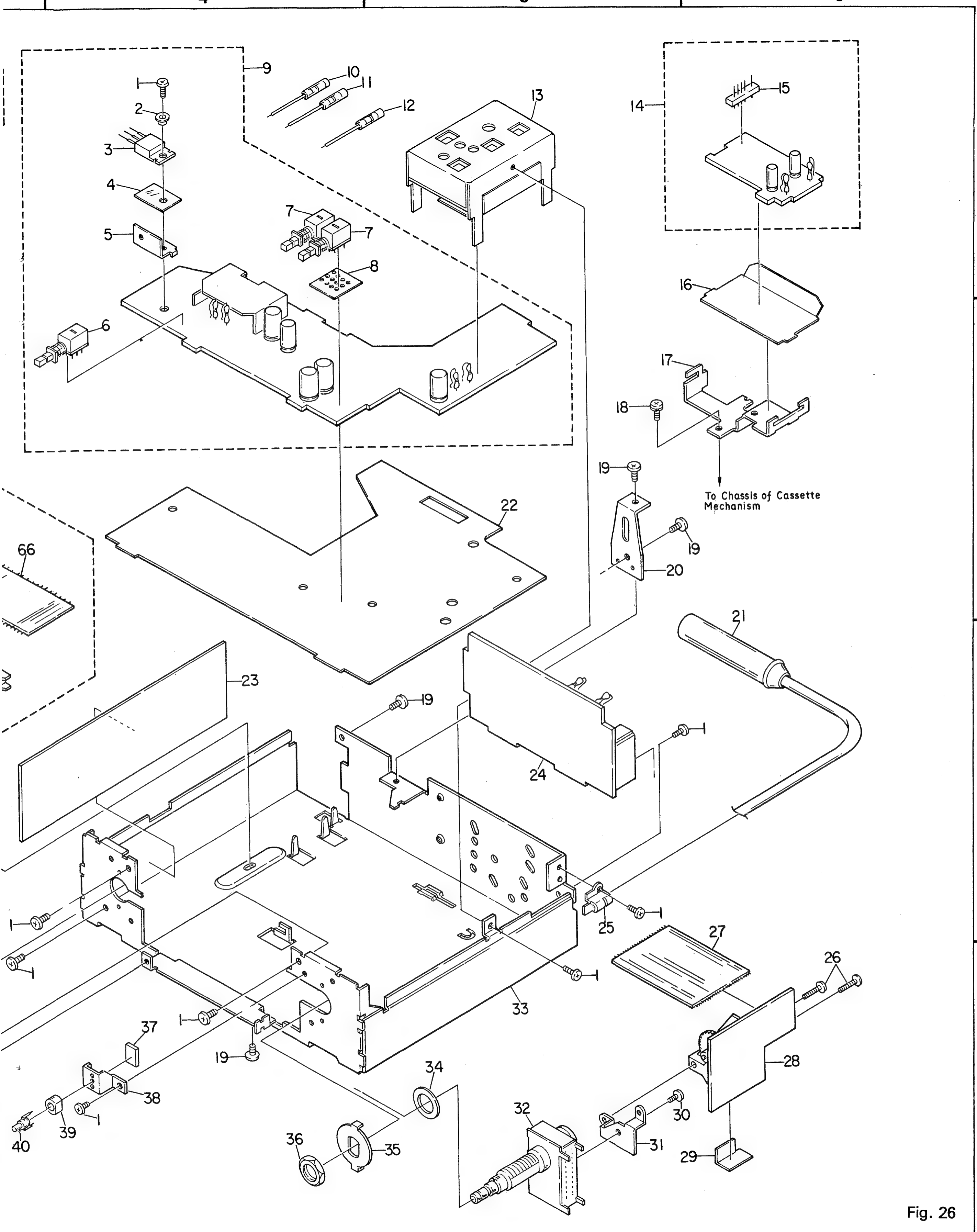


Fig. 26

10. PACKING METHOD

1	2	3

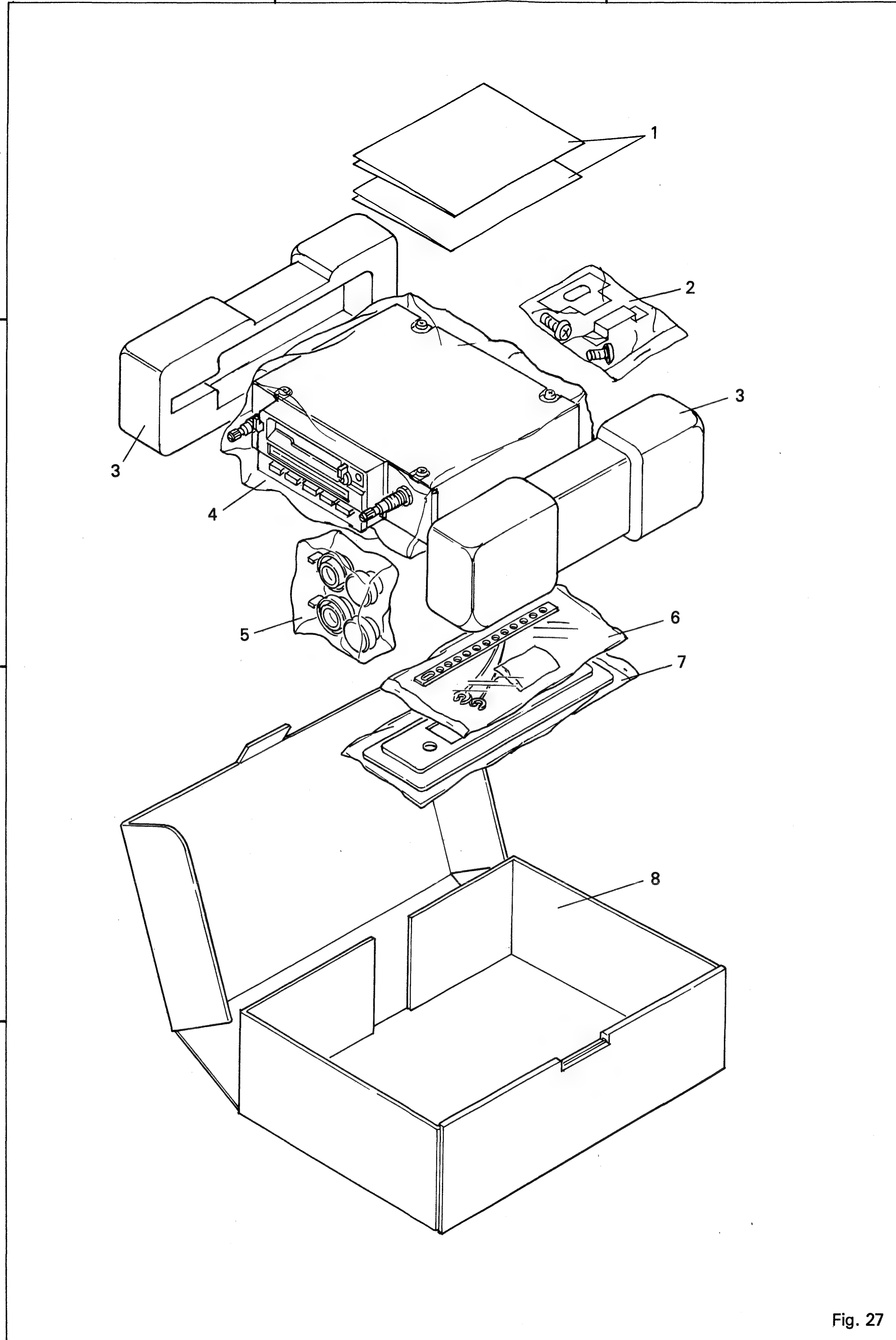


Fig. 27

11. PARTS LIST

NOTE:
When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).*

560Ω	*56 × 10¹*	*561*	*RD1/4PS* 5 6 1 *J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS* 4 7 3 *J*
0.5Ω	*OR5*		*RN2H* 0 R 5 *K*
1Ω	*010*		*RS1P* 0 1 0 *K*

Ex. 2 *When there are 3 effective digits (such as in high precision metal film resistors).*
5.62 kΩ *562 × 10¹* .... *RN1/4SR* 5 6 2 1 *F*

- *Parts whose parts numbers are omitted are subject to being not supplied.*

Control Unit (CWE-340)

MISCELLANEOUS

Part No.	Symbol & Description	
CWW-014	IC1(IC & Ceramic Filter)	
LA1230P	IC2	
LA2101	IC3	
LA3350P	IC4	
PST-506	IC5	
PD4003	IC6	
PD1002	IC7	
2SA473-O	Q1	
2SC1583	Q2, Q5	
2SA952	Q3	
2SA798	Q4	
2SC828	Q6	
1S1555 or 1S2076	D1, D2, D4-D7, D14	
VACANT	D3	
MV-1	D8-D10, D15	
XZ-062	D11	
YZ-074A	D12, D13	
CTF-016	L1	Ferri-Inductor, 15μH
CTF-039	L2	Ferri-Inductor, 2.7μH
CTC-106	L3	Coil, 330μH
CTC-094	L4	Coil, 680μH
CTC-108	T1	Coil
CTC-109	T2	Coil
CWW-026	CR1	470Ω/0.01μF
CWW-031	CR2	10kΩ/0.01μF
CWW-047	CR3	100kΩ/0.01μF
CWW-032	CR4	22kΩ/0.01μF
CCP-051	VR1	Volume, 680Ω (B)
C92-618	VR2	Semi-fixed, 4.7kΩ (B)
CCP-094	VR3	Semi-fixed, 2.2kΩ (B)
CCP-104	VR4	Volume, 4.7kΩ (B)
CSG-122	S1	Switch
CSG-121	S2, S3	Switch

RESISTORS

Part No.	Symbol & Description	
RD1/8VS□□□J	R1-R4, R7, R8, R11-R16 R18-R22, R24, R25, R30-R35 R39-R70, R75-R77, R82-R93	
RD1/8PS□□□J	R6, R10, R17	
RD1/2PS□□□J	R78	
CCN-060	R23	22kΩ
CCN-052	R71, R72, R81	4.7kΩ
CCN-036	R73, R74	22kΩ
CCN-034	R80	1.2kΩ
VACANT	R5, R9, R26-R29, R36-R38 R79	

CAPACITORS

Part No.	Symbol & Description
CKDYF473Z25	C1-C4, C6, C9
CCDSL101K50	C5
VACANT	C7, C12
CCDRH101J50	C8
CSZAR47M35	C10, C17, C22, C54, C58
CSZA010M25	C11, C53, C61
CEA330M10L	C13
CQMA473K50	C14
CQSA152J50	C15
CSZAR22M35	C16
CSZAR33M35	C18
CQMA223J50	C19, C20
CEA101M10L	C21, C32, C39, C56, C60, C64 C66, C68
CSZA0R1M35	C23
CQMA183K50	C24, C25
VACANT	C26
CEA330M16L	C27
CSZA100M10	C28, C29
VACANT	C30

PARTS LIST

Part No.	Symbol & Description
CEA100M16L	C31
CKDSA271J50	C33-C36
CCDSL050D50	C37
CQMA103K50	C38
CQMA152J50	C40
CKDSA681J50	C41, C42
CQMA122K50	C43
CKDSA680J50	C44
CQMA682J50	C45
CKDSA561J50	C46, C47
CKDSA102J50	C48
CCDCH080D50	C49
CSZA2R2M16	C50, C52
CSZA4R7M16	C51
VACANT	C55
CKDYF103Z25	C57, C63, C67
CSZA100M16	C59
CEA220M16L	C62
VACANT	C65

AM Tuner Unit (CWE-315) (KEX-20)

MISCELLANEOUS

Part No.	Symbol & Description	
2SK49-H2	Q1	
2SA786-Q or	Q2	
2SA826-R		
2SC535-B	Q3	
2SC460-B	Q4, Q5	
2SK19-Y	Q6	
ITT73N	D1	
1S2222	D2, D3	
1S1555	D4, D9, D10	
SVC303YAK	*D5~D7	
MV-1	D8	
CTB-068	L1	Coil, 10μH
VACANT	L2	
CTH-049 or	L3	Coil
CTH-057		Coil, 18μH
CTB-070	L4	Coil, 220μH
T24-030	L5	Ferri-Inductor, 100μH
CTB-081	L6	Coil, 2.2μH
CTB-078	T1	Coil
CTB-073	T2	Coil
CTE-037	T3	IF Transformer
CTB-075	T4	Coil
CTB-080	T5	Coil
C43-607	TC1, TC2	Ceramic Trimmer
CCP-063	VR1	Volume, 68kΩ (B)
CCX-006	G1	Lightning Piece

RESISTORS

Part No.	Symbol & Description	
RD1/8VS□□□J	R1-R3, R9-R27, R30	
	R33-R40	
RD1/8PS□□□J	R28	
CCN-054	R41	27kΩ
VACANT	R4-R8, R29, R31, R32	

CAPACITORS

Part No.	Symbol & Description	
CCDSL150K500L	C1	
CKDYB471K50	C2, C5, C26	
CSZA4R7M10	C3	
CKDYB121K50	C4	
CKDBC473M25	C6, C13, C16, C18	
CQMA223J50	C7-C11, C33, C34	
CKDYD103M50	C12	
CEA330P10	C14	
CKDYF103Z25	C15, C17	
CQMA103M50	C19	
CQMA273K50	C20	
CSZAR22M35	C21	
VACANT	C22	
CCH-028	C23	220μF/10V
CEA470P10	C24	
CSZA100M10	C25	
CKDYB222K50	C27	
CCDVK330J50	C28	
CCDWK100F50	C29	
CCDCH050D50 or	*C30	
CCDCH060D50 or		
CCDCH070F50 or		
CCDCH080F50		
CCDPH271J50L	C31	
CCDPH151J50L	C32	

Caution:
Diodes *D5-D7 and Capacitor *C30 used mutually in the following assembly.

D5-D7	C30
SVC303YAK-25	CCDCH050D50
SVC303YAK-24	CCDCH060D50
SVC303YAK-23	CCDCH070F50
SVC303YAK-22	CCDCH080F50

AM Tuner Unit (CWE-316) (KEX-23)

MISCELLANEOUS

Part No.	Symbol & Description	
2SK49-H2	Q1	
2SA786-Q or 2SA826-R	Q2	
2SC535-B	Q3	
2SC460-B	Q4, Q5	
2SK19-Y	Q6	
ITT73N	D1	
1S2222	D2, D3, D5, D8, D11-D13	
1S1555	D4, D10, D14, D15	
SVC303YAK	*D6, D7, D9	
MV-1	D16	
CTB-068	L1	Coil, 10μH
CTB-069	L2	Coil, 56mH
CTB-070	L3	Coil, 220μH
CTB-071	L4	Coil, 1mH
T24-030	L5	Ferri-Inductor, 100μH
CTB-081	L6	Coil
CTB-072	T1	Coil
CTB-073	T2	Coil
CTB-074	T3, T4	Coil
CTE-037	T5	IF Transformer
CTB-075	T6	Coil
CTB-080	T7	Coil
CTB-077	T8	Coil
CCG-030	TC1, TC2	Ceramic Trimmer, 20pF
CCP-081	VR1	Volume, 100kΩ (B)
CCP-078	VR2	Volume, 22kΩ (B)
CCX-006	G1	Lightning Piece

RESISTORS

Part No.	Symbol & Description	
RD1/8VS□□□J	R1, R2, R5-R28, R30-R40	
CCN-054	R3	27kΩ
CCN-055	R4	8.2kΩ
RD1/8PS□□□J	R29	

CAPACITORS

Part No.	Symbol & Description	
CCDSL150K500L	C1	
CKDYB222K50	C2, C35, C36	
CSZA4R7M10	C3	
CKDYB471K50	C4	
CKDYB121K50	C5	
CKDBC473M25	C6, C13, C18, C20	
CQMA333K50	C7, C8, C10-C12, C27, C33 C34	
VACANT	C9	
CKDYD103M50	C14	
CSZA220M10	C15	
CSZA100M10	C16	
CKDYF103Z25	C17, C19	
CEA470P6.3	C21	
CQMA103M50	C22	
CQMA223K50	C23	
CSZAR22M35	C24	
CCDPH271J50L	C25	
CCDPH151J50L	C26	
CCDCH020C50 or CCDCH030C50 or CCDCH040C50 or CCDCH050C50	*C28	
CCDPH090D50	C29	
CCDXK270J50	C30	
CCDXK090D50	C31	
CCDPH680J50	C32	
CCH-028	C37	220μF/10V

Caution:
Diodes *D6, D7, D9 and capacitor *C28 used mutually in the following assembly.

D6, D7, D9	C28
SVC303YAK-25	CCDCH020C50
SVC303YAK-24	CCDCH030C50
SVC303YAK-23	CCDCH040C50
SVC303YAK-22	CCDCH050C50

FM Front End Unit (CWB-061) (KEX-20) (CWB-062) (KEX-23)

MISCELLANEOUS

Part No.	Symbol & Description	
SD306PA	Q1	
2SC1674	Q2	
2SC1675-M	Q3	
ITT310PC, PD	D1-D3 (KEX-20)	
ITT310PB	D1-D3 (KEX-23)	
1S2790	D4	
MV-11	D5, D6	
CTC-107	L1	Coil
CTC-092	L2	Coil
CTC-093	L3	Coil
CTF-015	L4	Ferri-Inductor, 0.82μH
CTC-043	T1	IF Transformer
CCG-038	TC1-TC3	Ceramic Trimmer
CTX-022		Beaded Core
CCX-001	CR1	1kΩ/2200pF

RESISTORS

Part No.	Symbol & Description	
CCN-041	R1, R7, R16	68kΩ/1/10W
RD1/8VS□□□J	R2, R6, R8, R11-R15	
RD1/8PS□□□J	R3, R10	
CCN-040	R4	33kΩ/1/10W
CCN-007	R5	10kΩ/1/10W
CCN-059	R9	560kΩ
CCN-058	R17	47kΩ
CCN-037	R18	82kΩ (KEX-20)
CCN-053	R18	68kΩ (KEX-23)
CCN-057	R19	3.3kΩ

CAPACITORS

Part No.	Symbol & Description
CKDYA222K50	C1, C6, C15, C19
CCDSL330J50	C2
CKDYF103Z25	C3, C4, C14, C22, C23
CKDYF223Z25	C5, C13
CCDCH030D50	C7
CCDSH030D50	C8
CGB010K500	C9
CKDYB271K50	C10
CCDCH100F50	C11
CSZA010M25	C12
CCDSH330J50	C16
CCDTH100J50	C17 (KEX-20)
CCDTH120J50	C17 (KEX-23)
CCDRH100F50	C18
CCDTH030D50	C20
CCDTH050D50	C21

Control Amp Unit (CWG-071)

MISCELLANEOUS

NOTICE:
With Q1 through Q4, Q9 and Q10, Q5 and Q6, and with Q11 and Q12, use identical units for both channels and units of the same rank.
When LAP-502 is used with IC2, delete D15 and short circuit the gap.

Part No.	Symbol & Description	
HA11226	IC1	
LAP-501 or LAP-502	IC2	
2SC1740LN-R, S or 2SC945L-P, K	Q1-Q4, Q9, Q10	
2SA826LN-R, S or 2SA733-P, K	Q5, Q6, Q11, Q12	
2SK30A	Q7, Q8	
2SC1815-GR	Q13	
1S2076	D1-D6, D9-D15, D17, D18	
1N34A	D7, D8	
ITT73N	D16	
W03A,B,C	D19	
CTH-035	L1	Coil, 10μH
T24-030	L2	Ferri-Inductor, 100mH
C92-626	VR1	Semi-fixed, 10kΩ (B)

RESISTORS

Part No.	Symbol & Description
RD1/8VS□□□J	R1-R36, R38-R54, R56
RD1/4VS□□□J	R37
VACANT	R55

CAPACITORS

Part No.	Symbol & Description
CKDYB101K50	C1, C2
CQMA102J50	C3, C4
CQMA682J50	C5, C6
CSZA010M25	C7, C8, C33, C34, C36, C37 C40, C41, C50
CEA221M10L	C9
CSZA2R2M16	C10, C11, C31, C32, C43, C44
CEA471M16L	C12
CEA470M10L	C13
CSZA0R1M35	C14-C17
CSZAR33M35	C18, C19, C24 C25
CQMA104J50	C20, C21
CQMA472J50	C22, C23
CQMA153J50	C26-C29
CEA470M16L	C30, C47
VACANT	C35
CSZA4R7M25	C38, C39
CEA101M16L	C42, C45
CEA100M16L	C46, C49
CEA221M16L	C48

Volume Unit (CWG-072)

MISCELLANEOUS

Part No.	Symbol & Description	
2SC828	Q101	
CCS-223	VR1	Volume/Switch 20kΩ (A) × 2, 20kΩ (B) 50kΩ (W)
CCS-223	S1	Volume/Switch

RESISTORS

Part No.	Symbol & Description
RD1/8VS□□□J	R101-R103, R106, R107, R110, R111
CCN-031	R104, R105 1kΩ
CCN-065	R108, R109 1.5kΩ

CAPACITORS

Part No.	Symbol & Description
CSZAOR1M35	C101
CQMA562J50	C102, C103
CQMA333J50	C104, C105
CSZAR33M35	C106, C107
CQMA683J50	C108, C109
CSZA100M16	C110

Pre Amp Unit (CWF-070)

MISCELLANEOUS

NOTICE:
As for the Q1 and Q2, use the same ones and the same rank for both channels.

Part No.	Symbol & Description	
MB3106	IC1	
2SC1740LN-Q, R or 2SC732 TM-GR	Q1, Q2	
1S1555 or 1S2076	D1	
C92-627	VR1, VR2	Volume, 47kΩ (B)

RESISTORS

Part No.	Symbol & Description
RD1/8VS□□□J	R1-R24

CAPACITORS

Part No.	Symbol & Description
CKDYB821K50L	C1, C2
CSZA2R2M16	C3, C4, C9, C10
CEA470M10L	C5, C6
CQMA103J50	C7, C8
CQMA153J50	C11, C12
CEA101M10	C13

Display Unit (CXX-068)

Part No.	Symbol & Description	
	D1	LED Array
TLG-102	D2	
TLR-102	D3, D5	
LN43SYP	D4	
CEL-080	IL1	Lamp, 8V 60mA
CSG-134	S1	Switch

Tuning Unit

Part No.	Symbol & Description	
1S1555 or 1S2076	D102 (KEX-23)	
CSG-140	S1	Switch
CWM-040	Generator Unit	

Switch P.W. Board

Part No.	Symbol & Description	
ITT73N	D201, D202	
CCN-067	R201	180Ω
CSL-023	S1	Switch

Dolby NR Switch Unit

Part No.	Symbol & Description	
CCN-065	R1	1.5kΩ
CSG-100	S1	Switch

Motor P.W. Board

Part No.	Symbol & Description	
CEA471M16L	C1	
T63-618	L1	Coil

Miscellaneous Parts List

Part No.	Symbol & Description	
1S1555 or 1S2076	D101 (KEX-20)	
VACANT	D102	
SEL-303E	D103	
CCN-056	R94	0Ω
CCL-088	C1	Feed through Capacitor
CSZA100M10	C30	
CSN-060	S1	Switch
E21-007	FU1	Fuse, 0.5A
CPB-050	HD1	Head
CXM-061	M	Motor

Cabinet

Key No.	Part No.	Description
1.	CNB-493	Case
2.	B10-861-A	BM3×4
3.	CAC-282	Button
4.	CAC-283	Button
5.	CAC-285	Button
6.	CAC-270	Button
7.	CNE-230	Holder
8.	CBH-398	Spring
9.	CAT-080	Door
10.	CXX-065	Grille Unit (KEX-20)
	CXX-066	Grille Unit (KEX-23)
11.	B10-810-A	BM2.6×5
12.	CBH-399	Spring
13.	CAC-269	Button
14.	CAA-268	Knob
15.	CNV-769	Washer
16.		Panel
17.	CND-646	FW10ø×1t
18.	CBN-016	N10ø×3t
19.	CAA-298	Knob
20.	CAA-297	Knob
21.	CAA-313	Knob

Chassis

Key No.	Part No.	Description
1.	B10-810-A	BM2.6×5
2.	B21-679	Insulating Bush
3.	2SA473-O	Transistor
4.	CNM-352	Insulating Plate
5.		Heat Sink
6.	CSG-122	Switch
7.	CSG-121	Switch
8.		Insulator
9.	CWE-340	Control Unit
10.		Connector
11.		Connector
12.		Connector
13.	CWB-061	FM Front End Unit (KEX-20)
	CWB-062	FM Front End Unit (KEX-23)
14.	CWF-070	Pre Amp Unit
15.	CKS-060	Plug
16.		Insulator
17.		Bracket
18.	B06-111-A	PSA2.6×6
19.	B10-861-A	BM3×4
20.		Holder
21.	CDH-036	Antenna Cable
22.		Insulator
23.	CNM-540	Insulator
24.	CWE-315	AM Tuner Unit (KEX-20)
	CWE-316	AM Tuner Unit (KEX-23)
25.	CND-801	Clamper
26.	B10-216-A	PM2.6×16
27.	CDE-527	Connector
28.	CWM-040	Generator Unit
29.		Insulator
30.	B10-209-A	PM2.6×4
31.		Holder
32.	CSG-140	Switch
33.		Chassis
34.	CND-646	FW10ø×1t
35.	CNE-416	Guide
36.	CBN-016	N10ø×3t.
37.	CNP-753	P.W. Board
38.		Holder
39.	CNW-040	Spacer
40.	SEL-303E	LED
41.	B10-612-A	CM2.6×8
42.	CSG-100	Switch
43.		Cover
44.		Holder
45.		P.W. Board
46.		Insulator
47.	CWG-072	Volume Unit
48.		Guide

Key No.	Part No.	Description
49.	CCS-223	Volume/Switch
50.		Switch P.W. Board
51.		Connector
52.	CSL-023	Switch
53.	B10-809-A	BM2.6×4
54.		Holder
55.		Lever
56.		Holder
57.	CCL-088	Feed through Capacitor
58.	CNE-528	Clamper
59.		Connector
60.		Connector
61.		Connector
62.		Connector
63.		LED Array
64.	TLR-102	LED
65.	CSG-134	Switch
66.		Connector
67.	B08-204-A	Screw, M2×6
68.		Spacer
69.	LN43SYP	LED
70.	TLG-102	LED
71.	CEL-080	Lamp, 8V 60mA
72.		Holder
73.		Cover
74.	CXX-068	Display Unit
75.		Connector
76.	CDE-458	Cord
77.	E21-007	Fuse, 0.5A
78.	CDE-634	Cord
79.	CDE-636	Connector
80.	CDE-633	Connector
81.	CWG-071	Control Amp Unit

Packing Method

Key No.	Part No.	Description
1.	CRD-070	Owner's Manual (KEX-20)
	CRD-071	Owner's Manual (KEX-20)
	CRD-072	Owner's Manual (KEX-23)
	CRD-073	Owner's Manual (KEX-23)
2.	CEA-253	Holder Kit
2-1.	B10-875-A	BM4×6
2-2.	B20-038-A	OTW10ø×1.8t
3.	CHB-175	Styrofoam (1 set pair)
4.	E36-622	Polyethylene Bag
5.	CEA-314	Knob Kit
5-1.	CAA-313	Knob
5-2.	CAA-297	Knob
5-3.	CAA-298	Knob
6.	CEA-300	Accessory Kit
6-1.	CNC-975	Strap
6-2.	CDE-437	Cord
6-3.	CNV-769	Washer
6-4.	CEA-215	Screw Kit
6-4-1.	CBA-028	Screw for Strap
6-4-2.	B70-055-A	WN4ø×4.5t
6-4-3.	B20-013-A	SW4ø×1t
6-4-4.	B90-065-A	PSB5×16
6-4-5.	B70-056-A	WN5ø×5.3t
6-4-6.	CND-646	FW10ø×1t
6-4-7.	CBN-016	N10ø×3t
7.	CEA-312	Panel (KEX-20)
	CEA-313	Panel (KEX-23)
8.	CHB-577	Carton (KEX-20)
	CHB-579	Carton (KEX-23)

PIONEER ELECTRONIC CORPORATION
4-1, Meguro 1 chome, Meguro-ku, TOKYO, 153, JAPAN
PIONEER ELECTRONICS OF AMERICA
1925 E, Dominguez St. Long Beach, Calif. 90810
PIONEER ELECTRONIC (EUROPE) N.V.
Luithagen-Haven 9, 2030 Antwerp, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD.
178-184 Boundary Road, Braeside, Victoria 3195, Australia

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